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COMPUTERWORLD

WHY PROJECTS FAIL. AN EXCLUSIVE USER SURVEY, PAGE 110.

Client/server faces up to enterprise

Corporate customers revisit the classics

By Rosemary Cafasso

Client/server users are now adopting the classic information systems concept of an architecture to curb ad hoc development and avoid the islands-of-automation problem.

"It's the same thing we went through in the 1980s with minis, no question," said Peter Schay, a vice president at consultancy Gartner Group, Inc. in Stamford, Conn. "The good news is there [are few enough] client/server production systems that it is not too late to do the architecture."

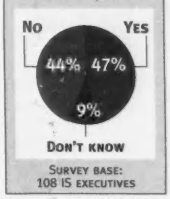
American Airlines, for example, got its start in client/server computing five years ago and is now establishing guidelines that will essentially function as a blueprint for developers.

American has about 50 client/server applications, and some of them were built with tools that are now obsolete, said Meg Lewis, a managing director at the airline's Sabre computing services. Under way for nearly a year, the guidelines are intended to produce a

Corporate, *page 14*

Balanced reaction

Will the services Novell announced last week make you more likely to choose it as an enterprise client/server provider?



Survey base: 108 IS executives

Source: *Computerworld* Database Division, Framingham, Mass.

Desktop leaders vie to meet IS demands

By Elisabeth Horwitt and William Brandel

Novell, Inc. last week joined its PC software rivals in conceding that it needs third-party help to establish itself as a credible client/server player to corporate users.

The company rolled out its Enterprise Solutions Division, which will join high-level systems integrators in advising major accounts on enterprise-level client/server projects. It also formed the Corporate Account Program to provide technology information and direct support to major corporate customers.

Users said Novell's move, like similar efforts in past years by Lotus Development Corp. and Microsoft Corp., is a step in the right direction.

"It's high time that [the big PC software vendors] changed some of their approaches," said David Shepard, chairman and chief executive officer of Fleet Services Corp. "They have not understood what it takes to deploy and support a business application in a corporate en-

Desktop, *page 14*

High-speed networks

Switches hit the fast lane

By Stephen P. Klett Jr.

Users looking for a more cost-effective way to alleviate congestion in large Ethernet LANs will receive a boost today from SynOptics Communications, Inc.

At Networld/Interop '94 in Las Vegas, the company will unveil a family of switches that will raise the bar for flexibility, manageability, throughput and price among the handful of switches that are currently available.

The crown jewel of SynOptics' LattisSwitch 28000 series is a 10M/100M bit/sec. switch based on the 100Base-X specification from the Fast Ethernet Alliance—a vendor consortium formed to extend the existing Ethernet standard to 100M bit/sec. [CW, Nov. 1, 1993]. Each of the $16,950 switch's 16 ports can be configured to support a 10M or 100M bit/sec. dedicated connection or LAN segment, SynOptics officials said.

Scalability

This flexibility is key. It allows users to start with a basic workgroup Ethernet switch that provides dedicated 10M bit/sec. connections between nodes. But it offers them the option of scaling up bandwidth down the road by installing high-speed adapter cards.

The switch is critical for SynOptics, which has been lagging behind competitors such as Cable-

Switches, *page 16*

THE MAN BEHIND DILBERT

Scott Adams knows what technical staffs are really thinking, and managers better pay attention. *Management, page 98.*

POLITICAL MANEUVERS

In the IS political arena, successful campaigning depends on well-placed allies. *Management, page 91.*

Iceberg finally thaws out

Long-delayed storage device ships; some bug fears linger

By Thomas Hoffman

After 2½ years of technical delays and enough product hype to make even P. T. Barnum blush, Storage Technology Corp. has finally made good on its promise to deliver Iceberg, its next-generation, fault-tolerant disk array subsystem.

And despite industry hullabaloo about Iceberg's lengthy microcode problems, prospective users said they are still hot for the storage device.

StorageTek, in addition to sending production microcode to Iceberg beta users, has already shipped 40 units and expects to have 100 machines installed by August, according to financial analysts who were briefed recently by the Louisville, Colo., vendor.

"We haven't received a definitive statement on when it would be available to us, but we're still interested in purchasing it," said Karl Peter, manager of data center operations at Bankers Trust Co. in Jersey City, N.J.

Iceberg, *page 10*

"Penguins on Ice" is StorageTek's code name for the 100 Iceberg units now in inventory and awaiting delivery. The backlog is 250 units.

Licensing controversy

Industry debates certification

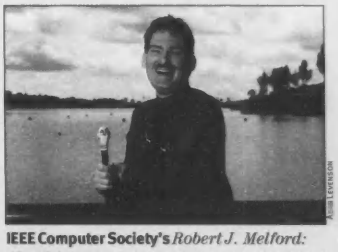
By Mitch Betts

Someday, the software controlling a passenger jet or hospital system will fail, and lives will be lost. Amid gut-wrenching TV reports on the disaster, anchorman Ted Koppel might say, "Tonight on *Nightline*, we'll try to answer the question: 'If plumbers and hairdressers have to be licensed, why not computer programmers?' "

Concern that such a scenario will come to pass in the next decade has prompted professional societies to take action. Several are drafting policies on the highly controversial topics of competency testing and mandatory government licensing for computer professionals. Recommendations from the various task forces are expected next year.

Supporters say licensing will help protect the public from buggy software and incom-

Licensing, *page 26*



IEEE Computer Society's *Robert J. Melford: Should government or industry set policy?*

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What's Inside

May 2, 1994

GEORGE CEOLLA

IN DEPTH

Creeping requirements can doom a project. Just ask **Terry Marksberry**, *CIO at The Meredith Corp., who tells of one now-defunct system that ballooned to three times its original cost because user requirements kept changing.*

Page 107

Executive Briefing

Information systems managers planning moves to client/server computing are keeping their eye on the dangers inherent in ad hoc development and islands of automation. As a result, the classic concept of an information architecture carries more appeal for them. Meanwhile, on the vendor side, **Novell** joins the ranks of PC arena vendors, such as **Microsoft**, in pitching client/server consulting services. *Page 1*

A large part of every CIO's job is political campaigning, but to do it successfully is tricky. Voter support can be like a leaking balloon — you have to constantly check its pressure and keep it inflated. *Page 91*

The OSF's Distributed Computing Environment (DCE) is ready for prime time at leading-edge sites, and DCE development is widening. But industry analysts and early users predict it will not be widely used until 1996. *Page 73*

One of the snags in any major corporate move is the impact that a single change in one department or procedure will have on others. The Ithink modeling package can help managers see the downstream effects of changes in the business process. *Page 42*

Professional associations are preparing for the day when politicians call for licensing of computer professionals to protect public safety, but the notion is highly controversial. That call may come in the wake of a systems disaster spawned by buggy software. The debate centers on opponents' claims that licensing IS professionals is a sham, designed to let those who have licenses charge more for their services, as well as on proponents' claims that if hairdressers need licenses, programmers working on lifesaving computer systems should, too. *Page 1*

Even though it suffers from name-recognition applications and bundling deals with hardware vendors, **IBM**'s OS/2 is apparently still making gains on the desktop. IBM's Personal Software Products group last week spelled out plans for a more efficient version of OS/2 for Windows. *Page 12*

The Networld/Interop '94 show gets under way in Las Vegas this week, with high-speed networking hardware and Ethernet switching taking a leading role. One key announcement is expected to be **SynOptics**' introduction of a family of aggressively priced "fast" Ethernet switches. *Page 1, 16 and 20*

The 5th Wave *by* Rich Tennant

NEWS

■ **Microsoft** continues to take heat for what developers consider overly restrictive language in nondisclosure agreements. *Page 4*

■ The latest **shake-up at Digital** means a new sales strategy and could spell trouble for less profitable lines of business. *Page 4*

■ **Computer Associates** will introduce CA-dBFast/400, a GUI client/server development package for the IBM **AS/400**. *Page 6*

■ **IBM** to launch a campaign to draw **Unix developers** to the AS/400 environment. *Page 6*

■ **Compaq** says it will push into vertical markets to help differentiate itself in the corporate desktop market. *Page 7*

■ **Sun Microsystems** and **Fujitsu** plan to enhance 32- and 64-bit **SPARC chips**. *Page 8*

■ Users deliver a resounding wait-and-see response to **Apple's new servers**. *Page 15*

DESKTOP COMPUTING

■ Sticky **trackballs** are an issue for some users but technologists may have put their finger on the problem. *Page 41*

WORKGROUP COMPUTING

■ Ontos and Versant hope to turn up the volume on what has been a relatively quiet **object-oriented database** market, offering enhanced versions of their products. *Page 51*

ENTERPRISE NETWORKING

■ Large companies are looking for back-end **messaging services** that are more robust than what LAN vendors currently offer. *Page 63*

LARGE SYSTEMS

■ Prompted by its recent decision to insource key operations, Edward D. Jones & Co. has already benefitted from replacing its IBM and Hitachi Data Systems DASD with EMC **disk arrays**. *Page 73*

APPLICATION DEVELOPMENT

■ Despite vendor commitments to **component-ized architectures**, the timetables for executing their strategies and their definition of plug and play itself are altogether different. *Page 81*

MANAGEMENT

■ Scott Adams' caustic comic strip **Dilbert** has captured the hearts of technical professionals, and management better pay attention. *Page 98*

CAREERS

■ The best preparation for a career in massively **parallel processing** is the same as for open systems and client/server computing — SQL and Unix. *Page 111*

MARKETPLACE

■ Is your **antivirus software** up to par? The National Computer Security Association offers a certification program that puts NetWare products through their paces. *Page 121*

COMMENTARY

■ **Paul Gillin** says the Chicago NDA dispute was fueled by Microsoft's audacity and a lack of backbone in third-party developers. *Page 34*

■ **Charles Babcock** highlights a case in which working with the basic power of Windows brought cash gains. *Page 6*

■ **Esther Dyson** says the way for many software companies to go may be through technology alliances with many companies rather than with one big partner. *Page 35*

■ **Eric Harslem** places the burden on systems vendors to help network managers cope with their challenges. *Page 35*

■ **Jeffrey Henning** says the availability of products like Shapeware's Visio Express can influence user's application suite selection. *Page 41*

■ **Richard Finkelstein** says the parting of the ways of Microsoft and Sybase represents a schism that will divide client/server computing into two camps. *Page 51*

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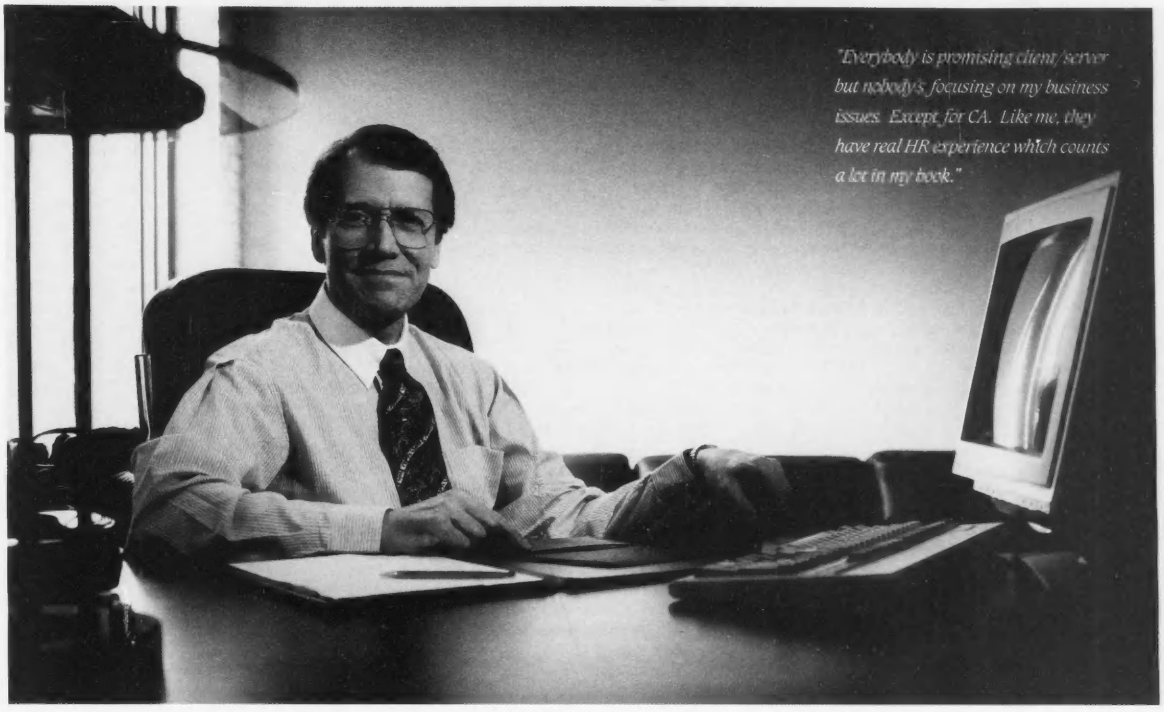
While Everyone Jumps On The Client/Server Bandwagon, Allow Us To Introduce Something Better.



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Microsoft retreats on NDAs – a little

By Stuart J. Johnston and Melinda-Carol Ballou

■ Microsoft Corp. has rescinded portions of its stringent Chicago nondisclosure agreement (NDA) for WordPerfect Corp. developers, but it is retaining them for competing systems developers who want to receive the "prebeta" code.

In some cases, the Chicago NDA demanded that the programmers who work on Chicago (also known as Windows 4.0) not work on competing systems technologies for a period of three years [CW, April 25].

In the meantime, developers seeking access to another key Microsoft technology said the NDAs they have received could signal a growing pattern of using such agreements to stifle work on competing technologies.

Those developers were referring to NDAs received last month for Microsoft's Object Linking and Embedding (OLE) Controls Developer's Kit (CDK). The CDK NDAs allow the developers to create OLE controls but appear to prohibit them from writing any tools that would allow end users to build their own OLE controls.

"If I were Symantec, Borland or Watcom, I'd be really upset," said one developer who received the CDK NDA. He added that it seems as if Microsoft wants to foster a cottage industry for OLE controls but does not want to allow the creation of competing tools.

"It's unfair of Microsoft in their position," said Tim Harmon, an analyst at Meta Group, Inc.'s Burlingame, Calif., office. Such a move could leave users with only a single choice for tools that create OLE controls, he added.

Microsoft Senior Vice President Roger Heinen, however, said NDAs such as the one for the OLE CDK are standard practice for prerelease software and that any company with concerns should raise them with Microsoft.

As for the Chicago NDAs, the clash last week was "unfortunate," and at least one feature of the NDA was not a standard requirement in the company's usual NDA, said Bob Kruger, director of strategic relations and standards at Microsoft [CW, April 25].

Two items dropped

That feature, which stipulated the three-year waiting period, was one of two items dropped from the NDA that Microsoft had asked WordPerfect to sign.

The other requirement dropped was an exclusion from the Chicago beta of WordPerfect developers who are working on Component Integration Laboratories' OpenDoc object exchange technology. Microsoft considers OpenDoc a direct competitor of OLE.

The special NDAs went to only two applications developers, Kruger said. WordPerfect, which is porting OpenDoc to Windows and providing code to allow it to interoperate with OLE, was one. The other went to Borland International, Inc., he said.

Other developers who received the special NDAs were vendors of competing operating system technologies, Kruger said. These include Novell, Inc., The Santa Cruz Operation and SunSoft, Inc.

A requirement that the developers who would have access to the beta be listed on the NDA is not unheard of in the industry — a point that several independent software vendors disputed last week — and will not be dropped, Kruger said.

In fact, Sun officials complained about the restrictions because the same people who are working on PC-NFS support for Chicago are also dedicated to Wabi work. The Sun officials said they did not have enough qualified people to have separate teams working on both, which may slow progress toward release of one or both of the technologies.

Still, several developers said last week that the language in the CDK NDA is corroborating evidence, along with the Chicago NDA, of a certain pattern on Microsoft's part.

"It is not news to the industry that Microsoft wants to own the desktop," said David Moon, senior vice president of development at WordPerfect. "What is news is they tried to take advantage of their monopolistic presence to maybe cut some people out."

But Moon added that Microsoft had largely alleviated WordPerfect's concerns by eliminating the offensive clauses in the NDA for Chicago. "We are now able to move forward," he said.

Ed Scannell contributed to this report.

'Noxious' deal

Even as the word went out from Microsoft that it would ship early copies of the OLE CDK last month, some independent developers were saying the nondisclosure agreements accompanying the beta copies were too noxious to sign. An excerpt from the NDA for the OLE CDK reads as follows: RECIPIENT agrees to prohibit any authorized individuals who have had access to the PRODUCT [OLE CDK] from participating in the design and/or development, feedback, or guidance of a RECIPIENT product that is competitive with the PRODUCT [OLE CDK] without Microsoft's express written permission.

Paul Gillin takes issue with the NDA. See page 34.

Digital power shift dispenses latest Rx

By Mary Brandel

Promises were made and power was shifted at Digital Equipment Corp. last week as Enrico Pesatori, head of the PC business unit, took the reins from Edward Lucente, who resigned as vice president of worldwide sales and marketing.

Nevertheless, Digital provided only glimpses of the action it will take to turn the company around.

Enrico Pesatori *acknowledged Digital's need 'to undergo a severe downsizing'*

"I'll be watching, but I don't know if moving people around at this point is going to make any difference," said Robert Cloninger, data processing manager at OK Industries, Inc. in Fort Smith, Ark. "If no one's got an idea of consistency that they can sell through the rest of the company, a couple of personnel changes might not make any difference."

In a letter to stockholders last week, Chief Executive Officer Robert Palmer outlined two actions: Give business units more accountability and direct ownership and focus investments in business segments where Digital can prosper.

Digital executives and industry observers said the company will do the following:

- Make a strong move to sell Alpha systems through indirect channels.
- Cut staff, especially but not solely in sales and marketing.
- Reduce emphasis on nonprofitable product lines.

"Anything that isn't profitable is in danger," said Terry Shannon, analyst at Illuminata in Hollis, N.H.

The promotion of Pesatori, who has experience with high-volume, low-margin business, lends credence to Digital's commitment to sell Alpha through alternative channels, analysts said.

"We are moving rapidly from direct to indirect" with workstations and servers, especially for smaller accounts, Pesatori said in an interview last week.

But analysts said it remains to be seen whether the PC business model is easily transferred to the server business.

Yet analysts were heartened by the work Pesatori has done adapting the PC business unit to market realities. If Pesatori "breaks up internal operational gridlock inside systems marketing and makes each unit independently accountable and can pare down investments, I believe he can restore growth and confidence in the business," said Tom Austin, an analyst at Gartner Group, Inc.

Time for spring cleaning

Before any growth can occur, however, analysts agreed that Digital must put its house in order. Analysts are looking to sales and marketing for the biggest head count loss. Pesatori acknowledged the need "to undergo a severe downsizing," but he stressed that the entire work force is under scrutiny — not just salespeople.

On the product side, the company has already done some of the legwork to eliminate redundancy in its Alpha servers by incorporating a modular product design in its 2100 model, introduced in April. "There are eight different servers available today," Shannon said. "That's cluttered. It would be nice to slim down the Alpha line to something like four."

Digital has already worked to reduce product development expenditures by "aggressively" partnering with other vendors, said William Strecker, chief technology officer.

PALMER'S PITCH

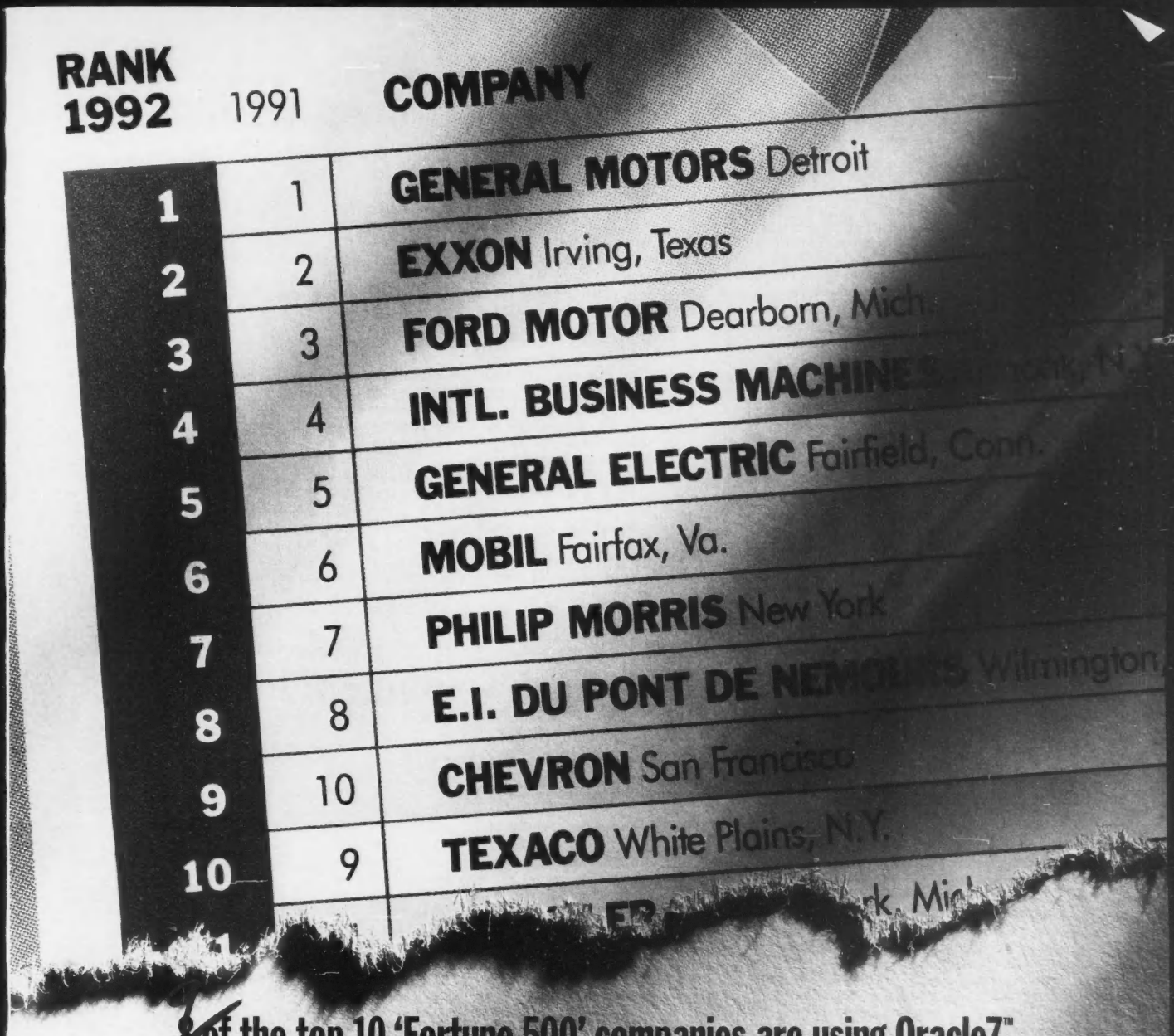
In a shareholder letter, Digital CEO Robert Palmer outlined the following milestones achieved in the last 18 months:

- SENIOR MANAGEMENT AND PERSONNEL REORGANIZED.
- EMPLOYEE POPULATION SIGNIFICANTLY DOWNSIZED.
- A MUCH LEANER AND MORE COST-EFFECTIVE INFRASTRUCTURE.
- ENGINEERING REDUNDANCY GREATLY REDUCED.
- DIGITAL TRANSFORMED FROM A CLOSED AND PROPRIETARY SYSTEMS COMPANY TO AN INDUSTRY LEADER IN OPEN SYSTEMS CLIENT/SERVER COMPUTING.

Corrections

Due to a reporting error, the article "Team drives technology forward" [CW, April 18] stated that the advanced technologies department at SmithKline Beecham PLC reports directly to the senior vice president of information resources. In fact, that department reports to Louis Valente, vice president and director of strategic information technology.

An article in the April 25 issue, "Borland faces uncertain future," incorrectly stated that Borland was expected to lay off 200 more employees in addition to layoffs in Europe. In fact, Borland had already laid off those employees.



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'How To' update the folklore system

Windows will improve in Microsoft's Chicago version, which will better integrate the user interface and resolve reliability issues that have dogged it since its inception. But in case you haven't noticed, application developers in the business world aren't waiting for the improvements. They have gone ahead and built sophisticated business applications, sometimes realizing dramatic gains as a result of this common denominator technology.

Take Brian Westcott's firm, Westt, Inc. in Menlo Park, Calif.

Westt is a custom manufacturer of electronic subassemblies for Silicon Valley semiconductor firms and users of finely calibrated electro/mechanical devices. Westt is typically called on to produce wafer handling devices for a chip fabrication line. The firm machines 70 parts of a 500-part piece and then assembles the total.

Assembly workers might produce six units in a week, then not fill another order for a month. Consequently, the need for manufacturing documentation — blueprints, exploded three-dimensional drawings, parts and tool lists, etc. — is particularly acute.

At the same time, this need often goes unmet. Parts are recast and assembly sequences changed as outside designers try to iron out kinks.

"The paper system was always out of date," Westcott said recently in an interview. In fact, assembly techniques rested on the back of what Westcott calls "the folklore system."

A skilled assembler would learn from experience, sharing hard-won knowledge with a co-worker and speeding the production process. But, as Westcott noted, the only problem is, "It's only as good as who is talking to whom on a given day."

The Mets View

How To shows how Windows can boost productivity and quality in a real-world, time-sensitive setting.

Charles Babcock

A year-and-a-half ago, Tom Stepien, the head of Westt's in-house computer-integrated manufacturing consultants, began working on a Windows system to put manufacturing documentation online. Using Gupta's SQLWindows and SQLBase 5.1, and Microsoft's Visual Basic, Stepien built How To, a Windows application that coordinates images of subassemblies with a menu bar that lets workers call up a list of parts or tools needed or an exploded drawing of how the parts fit together, along with instructions. Blueprint and drawing updates are scanned into the system and are available to everyone on the Novell NetWare LAN.

A "Standards" menu item allows a worker to check known recommendations, such as the measure of solder for a joint or how much a fastener should be tightened. Video sequences illustrating a production step are added using Westt's own videocamera plugged into a VGA board in the PC. The image is edited with tools from Computer Presentations Image Prep.

The system also allows skilled assemblers to annotate the diagrams, offering advice based on their experience. "The new set of luer fittings have a lot of burrs. Don't use them. Use those from lot #6347 instead," one worker commented.

The system, running on a $2,300 486 PC "captures the knowledge base in the company," Westcott noted. The server PC is on a NetWare LAN and can be accessed by three PCs on the factory floor.

After the start-up of How To, which cost $23,490 to implement, workers switched between jobs more easily and spent less time redoing work. First-year savings totaled $17,296 through the reduction of overtime and increased productivity, Westcott said.

The capture of corrections and sound assembly techniques has increased product reliability and decreased the field defect rate, Westcott said. He noted the defect rate fell from 1.5 per unit to 0.34 per unit, leading to another $11,600 savings.

Westt's How To application shows just how much the elemental power of Windows can boost productivity and quality in a real-world setting. You may not want the production process itself to be carried by Windows, but it can certainly help.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

IBM aims to open AS/400 . . .

By Craig Stedman

■ IBM this week will begin its campaign to lure Unix software vendors to support the AS/400 line, its highly profitable family of business computers that are still saddled with a proprietary systems image.

As part of its latest AS/400 rollout, IBM this week will introduce an OS/400 release that includes Unix features such as an ANSI standard C compiler, the Posix file system, sockets and threads, analysts said.

The computer giant hopes to transform the AS/400's image by building more than half of the Spec 1170 Unix application programming interfaces (API) into the OS/400 operating system during the next two years, according to analysts familiar with IBM's plans.

That should make it easier to port Unix code to the AS/400, opening the door for developers of client/server tools and applications to move their software to the system, analysts agreed. AS/400 users stand to benefit from having a wider selection of graphical user interface-based tools to choose from as well.

Unix vendors "have had to do unnatural acts" to port to the AS/400 until now, said David Peterson, a former AS/400 Division executive who is president of Midrange Open Business Strategies, Inc., a consultancy in Rochester, Minn. He added, however, that the OS/400 changes "make it just your ordinary, friendly C environment," and customers should see "more and better tools and applications" as a result.

Big plans

OS/400 Version 3 Release 1 and a follow-on due in 1995 are also expected to boost the number of Spec 1170 APIs supported by the operating system from about 200 to at least 650, said Bob Djurdjevic, president of Annex Research, Inc. in Phoenix. Between 65% and 85% of the most important APIs should be incorporated into the operating system this year, he added.

Donald Miller, chief information officer at International Game Technology in Reno, Nev., said IBM's Spec 1170 plans sound promising. "If I can get the AS/400 to look more like an open system, that's wonderful," Miller said, noting that he has no interest in moving to Unix for at least three years.

Miller added, though, that IBM's client/server promises for the AS/400 have not yet come to fruition. "You can put in multiple peer-level AS/400s, but everything is still drawn off what I refer to as the mother ship," he said.

. . . as development tool debuts

By Thomas Hoffman

Computer Associates International, Inc. will attempt to plug a hole in the ever-changing IBM AS/400 market this week when the Islandia, N.Y., software giant introduces CA-dBFast/400. The client/server development package, with its Windows-based graphical user interface (GUI), was designed to enable users to share AS/400 data between the midrange platform and desktop environments.

Originally conceived as a stand-alone midsize hub, the AS/400 has slowly evolved to act more as an enterprise server in two- and three-tiered corporate computing architectures, according to users and analysts. IBM will tout the AS/400's improved interoperability tomorrow as part of its largest AS/400 product rollout since the machines were introduced in 1988.

CA-dBFast/400 should be heartily received because of the dearth of AS/400 application development tools on the market, users said.

"We're getting ready to front-end our AS/400 to an [IBM] OS/2 LAN for client/server development, so there's definitely some interest in" CA-dBFast/400, said Brian Nichols, manager of management services at Kay Wholesale Drug Co. in Wilkes-Barre, Pa.

Looking good

The development tool set, which fully supports Microsoft Corp.'s Dynamic Data Exchange and Dynamic Link Libraries, can execute program logic on both the AS/400 and PCs running Windows. The product uses IBM's AS/400 PC Support module to communicate between AS/400 hosts and desktop clients.

CA product developers had been using the vendor's CA-dBFast development suite to create new modules for its AS/400 packages, such as manufacturing product CA-PRMS, said Marc Sokol, CA's director of product strategy.

Early CA-dBFast/400 users have not used the tool kit long enough to discuss its performance, but they remained upbeat about its potential.

"We've only been using it for about a month, but already we feel it will be a useful GUI tool for our users to create their own applications and not have to rely on MIS so often" for application development, said Krish Kumar, MIS manager at Medex, Inc., a Hilliard, Ohio, manufacturer of medical care products and an IBM AS/400 Model F50 shop.

Van Camp's Boyles: *CA's new AS/400 tool will have synergy with CA-PRMS*

Seeking portability

"What we're looking for — and what we think we've found — is a tool that will give us some portability between the desktops and the AS/400," said Greg Reischlein, MIS manager at BW/IP International, a Temecula, Calif., manufacturer of mechanical seals. He has been testing CA-dBFast/400 since last month.

Van Camp Seafood Co. took a brief look at a demo copy of Microsoft's SQL Windows but decided to beta test CA-dBFast/400. The canned seafood producer foresees strong synergy between the application development tool and its CA-PRMS manufacturing suite, said Jack Boyles, director of MIS at the San Diego-based firm. "CA-dBFast/400 should fit in neatly with our PRMS file definitions," he explained.

Currently in beta testing, CA-dBFast/400 should begin shipping by mid-July priced at $795 per developer's copy, with a onetime $2,000 charge for the AS/400 connection.

Compaq revamps for corporate users

Customer feedback key to product differentiation

By Jaikumar Vijayan
and Michael Fitzgerald
HOUSTON

Compaq Computer Corp. is concerned that its booming consumer business may distract the company from its core corporate customers, which could lead to longer-term problems.

So Compaq recently said it has revamped its sales organization, creating a separate group for its 800 major accounts. The vendor also unveiled a vertical market strategy designed to better serve corporations.

Compaq said it will separately target vertical industries through a series of seminars that will bring together information systems managers from a particular area — law firms, for instance.

MICHAEL ABRAMSON

Aon Specialty's Glenn Sandusky: *Compaq may become too focused on particular industries*

The goal is to get customer feedback that will enable Compaq to differentiate its high-end corporate systems through industry-specific products, software bundles and packaging. For example, it could offer manufacturing customers industrialized PCs.

"We need to get to customers where they work," said Ross Cooley, senior vice president of sales at Compaq. "You are going to see a proliferation of offerings and a broader product line."

Meanwhile, the ProLinea line will be beefed up to cut off any potential threat from Gateway 2000, Inc.

Users and analysts reacted cautiously to news of the corporate strategy.

"It definitely is one way of adding value to corporate customers, but you may start to miss the big picture," said Glenn Sandusky, chief information officer at Aon Specialty Group in Chicago and a former member of Compaq's major accounts council. He said Compaq might become too focused on particular groups.

Compaq officials said, however, that they would let select industry-specific resellers to do much or all of the customizing.

Corporate assistance

The vertical move will also see Compaq changing the way it supports corporate users. In June, the company will roll out new phone lines with support personnel dedicated exclusively to corporate accounts and issues. Today, service personnel may deal with anything from raw consumers on up.

Users have been grumbling that Compaq's service is not as good as it was before a field sales force revamp last year. Compaq officials conceded that their service could be better.

"They knew what my problem was, but they simply weren't interested in fixing it. I'm tempted to go to Dell," said one user in a branch office of a large government concern, who asked not to be named. But he said he was interested in seeing how the new approach will work.

Meanwhile, availability issues remain Compaq's biggest problem, according to Cooley. Analysts said that despite Compaq's unprecedented first-quarter success, they expect it will not outsell IBM for the entire year, partly for that reason.

Cooley said Compaq was in a better position supply-wise than during its crisis in the first half of last year, but he declined to say when the company might catch up. "I've been wrong every time before, so why would you believe me anyway?"

Cooley said Compaq was losing opportunities and had no idea of the level of demand for its products. He also said it will move to build-to-order manufacturing, a la Dell Computer Corp., but cannot do so until it catches up with demand.

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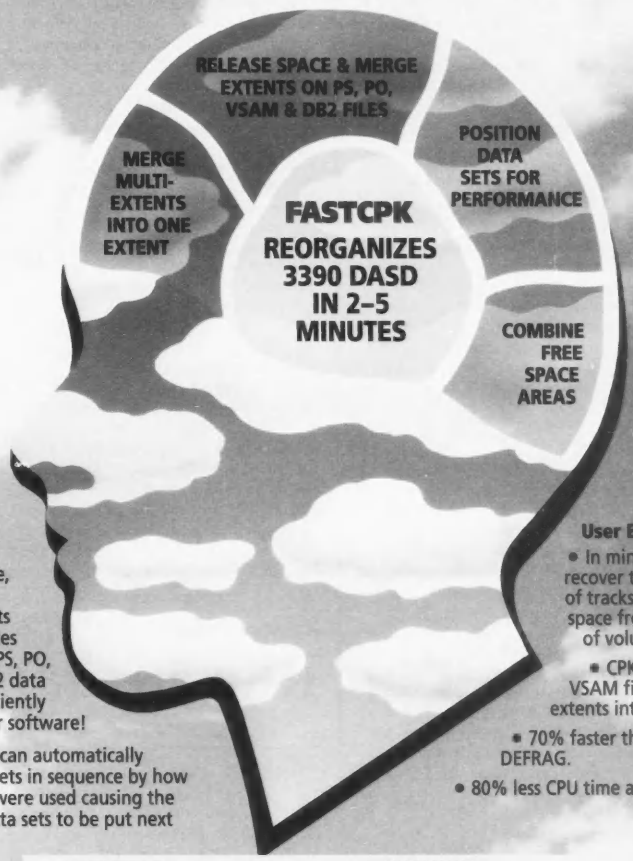

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//DASD1    DD   VOL=
                UNI
//SYSIN    DD   *
  DEFRAG   DDNAME(DASD1)
```

SIMPLE CONVERSION

Fast COMPAKTOR

```
//FASTCPK  EXEC PGM=FDRCPK
//SYSPRINT DD   SYSOUT=*
//SYSMAP   DD   SYSOUT=*
//SYSIN    DD   *
  COMPAKT TYPE=FASTCPK,VOL=TS0001
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News Shorts

Agencies team on telecom purchases

The military and civilian sides of the federal government will combine their multibillion-dollar purchases of telecommunications services. The **U.S. General Services Administration** (GSA), whose FTS 2000 contracts with **AT&T Corp.** and **Sprint Corp.** expire in 1998, said it will join with the **U.S. Department of Defense**, whose telecommunications network contract with AT&T expires in 1996. GSA administrator Roger W. Johnson called the combined buys a "potential billion-dollar savings for the American taxpayer." Pentagon information systems chief Emmett Paige Jr. said, "This consolidated effort would form the foundation of a global information infrastructure."

Oracle, Bell Atlantic interact for IS

Oracle Corp. and **Bell Atlantic Corp.** announced a deal last week intended to induce mainstream information systems shops to build multimedia and interactive TV applications. **Kaiser Permanente Health Plan, Inc.**, a nationwide health maintenance organization, is expected to contract with both companies for databases, development tools and consulting services for projects involving interactive voice, video and imaging projects.

Data centers spending less on tech

Data center work loads are still growing, but the centers are spending less on technology and personnel, according to **Nolan, Norton & Co.**'s annual data center baseline survey, released last week. In the 200 sites surveyed, data centers used 5% more processor capacity than last year. In the meantime, however, online user populations remained steady, and average processor loads were unchanged. Overall expenditures decreased by 5.5%, which Nolan, Norton attributed mainly to lower technology costs, especially in processors and disk arrays.

Software theft rises

Software vendors lost $12.8 billion worldwide last year due to software theft, according to the **Business Software Alliance**. Piracy in 1992 was estimated at $12 billion. By region in 1993, losses ranged from $822 million in Latin America to $4.9 billion in Europe. Some of the worst losses were in Japan, the alliance said, with only 20% of software in use there legally obtained.

Honeywell outsources messaging

Honeywell, Inc. said it will outsource its global messaging system to **Control Data Systems, Inc.** in a contract valued at $1.7 million over the next three years. The system will connect 35,000 Honeywell users in 95 countries. Control Data will deploy the system using its X.400- and X.500-based messaging products and will administer the network from its Arden Hills, Minn., headquarters.

SHORT TAKES Three quarters of the 40,000 people surveyed on the **Prodigy** on-line service said the late President Nixon's achievements outweighed his failures; 64% said they would vote for him over an incumbent President Clinton in a hypothetical elec.ion. . . . Lois Juliber, chief technological officer at the **Colgate-Palmolive Co.** for the past two years, was named president of its $2.5 billion U.S./Canada division. . . . **Computer Associates International, Inc.** said its CA-Unicenter distributed systems management package will support Digital Equipment Corp.'s Alpha AXP running the Open Software Foundation's OSF/1 operating system.

More news shorts, *page 16*

RISC chip market heats up

IBM, Fujitsu tighten their hold on the market with joint ventures

By Jean S. Bozman

Two of the world's biggest chip foundries, IBM and Fujitsu Ltd., last week tightened their grip on the worldwide market for RISC chips, which will power a new generation of enterprisewide open systems applications.

In twin moves one day apart, Fujitsu agreed to jointly design all future SPARC chips with Sun Microsystems, Inc., and Hitachi Ltd. agreed to use IBM's CMOS chips in its future mainframes. Hitachi will also be able to use IBM's Power and PowerPC chips in its line of high-end RISC parallel processors due in 1996 (see story below).

Revving up

Fujitsu has committed to using SPARC in its own product line and in that of ICL, of which Fujitsu owns an 80% interest. The agreement will boost SPARC's floating-point performance and create chip enhancements to increase the performance of Sun's Wabi interface for Windows software, Sun executives said.

The agreements are expected to save the firms tens of millions of dollars by eliminating redundant research and development costs, industry analysts said. At the same time, the Japanese manufacturers — traditionally strong in IBM-compatible mainframes and PCs — will gain ground in the growing global client/server and Unix systems markets.

U.S. market

The Japanese firms will distribute their products in this country. Fujitsu will sell its machines through Amdahl Corp., Sun's systems will be sold worldwide, and Hitachi will sell through Hitachi Data Systems Corp. in Santa Clara, Calif.

While users may hear the thundering steps of the big vendor agreements at a distance, analysts took sharp notice of the potential impact of four major computer companies standardizing on a few CMOS chips for enterprisewide applications. RISC chips are one type of CMOS chip.

"Everybody's moving to CMOS for large-scale systems, and they also seem to be rallying around the Power and SPARC flags for servers, and potentially, for parallel processors," said Steve Josselyn, manager of systems research at International Data Corp. in Framingham, Mass. The research firm said it believes Hitachi paid about $100 million for access to IBM's CMOS and RISC technology and the right to make modifications to it.

Sun and Fujitsu have drawn closer through their agreement to jointly design SPARC chips, boosting the floating-point performance of SPARC and enhancing 32-bit and forthcoming 64-bit designs. The pact eliminates legal barriers to intense cooperation in engineering, Sun officials said.

The Sun/Fujitsu agreement is intended to revitalize the fragmented SPARC market in the face of increased RISC competition, said Yoshiro Yoshioka, general manager of Fujitsu's open systems business and a board member of Fujitsu Ltd.

Slipping away

Many Sun workstation users have watched SPARC slip in the power race against rival RISC chips with dismay.

"I haven't seen anything in recent years to indicate that Sun is particularly focused on scientific floating-point computation," said Michael Pearlman, systems manager at Rice University's computational applied mathematics department in Houston. While the Fujitsu tie-in is interesting, "the bottom line is going to be when the product hits," he said.

The SPARC clone market has been fragmented by lagging performance and different SPARC designs, analysts said. Several SPARC chip manufacturers have walked away, including Cypress Semiconductor Corp. in San Jose, Calif., which sold its SPARC-fabrication unit to Fujitsu last year. "There's been a real love/hate thing between Sun and the clone market," said Terry Bennett, director of technical systems research at Computer Intelligence/InfoCorp in Beaverton, Ore.

The deal between Sun and Fujitsu leaves room for further cooperation in client/server systems and software, said Sun Chief Information Officer Bill Raduchel, who helped negotiate the agreement with Fujitsu. "The master agreement we put in place simply creates the framework of cooperation between the two companies," Raduchel said.

Mainframe development

Hitachi sharpens technical edge

By Jean S. Bozman

Hitachi Ltd. last week signed a pact with IBM that enables it to resell IBM's Powerparallel RISC-based servers and use IBM's CMOS chips to build a new class of mainframes. Analysts value the agreement at $100 million (see story above).

Hitachi will also use IBM's Power and PowerPC RISC chips for its RISC-based parallel processors.

In force until 1999, the agreement is expected to reduce Hitachi's manufacturing costs, industry analysts said. It should also speed a new generation of Unix-based parallel processors to market.

The two firms also agreed to cooperate on the development of interfaces, middleware and software for the new CMOS and RISC systems.

The deal will give a technical edge to Hitachi Data Systems Corp. over mainframe competitor Amdahl Corp., which gets its hardware from Fujitsu Ltd., said Steve Josselyn, an analyst at International Data Corp. in Framingham, Mass.

HDS will market the CMOS-based Hitachi mainframes in the U.S., said HDS Chief Executive Officer John Staedke.

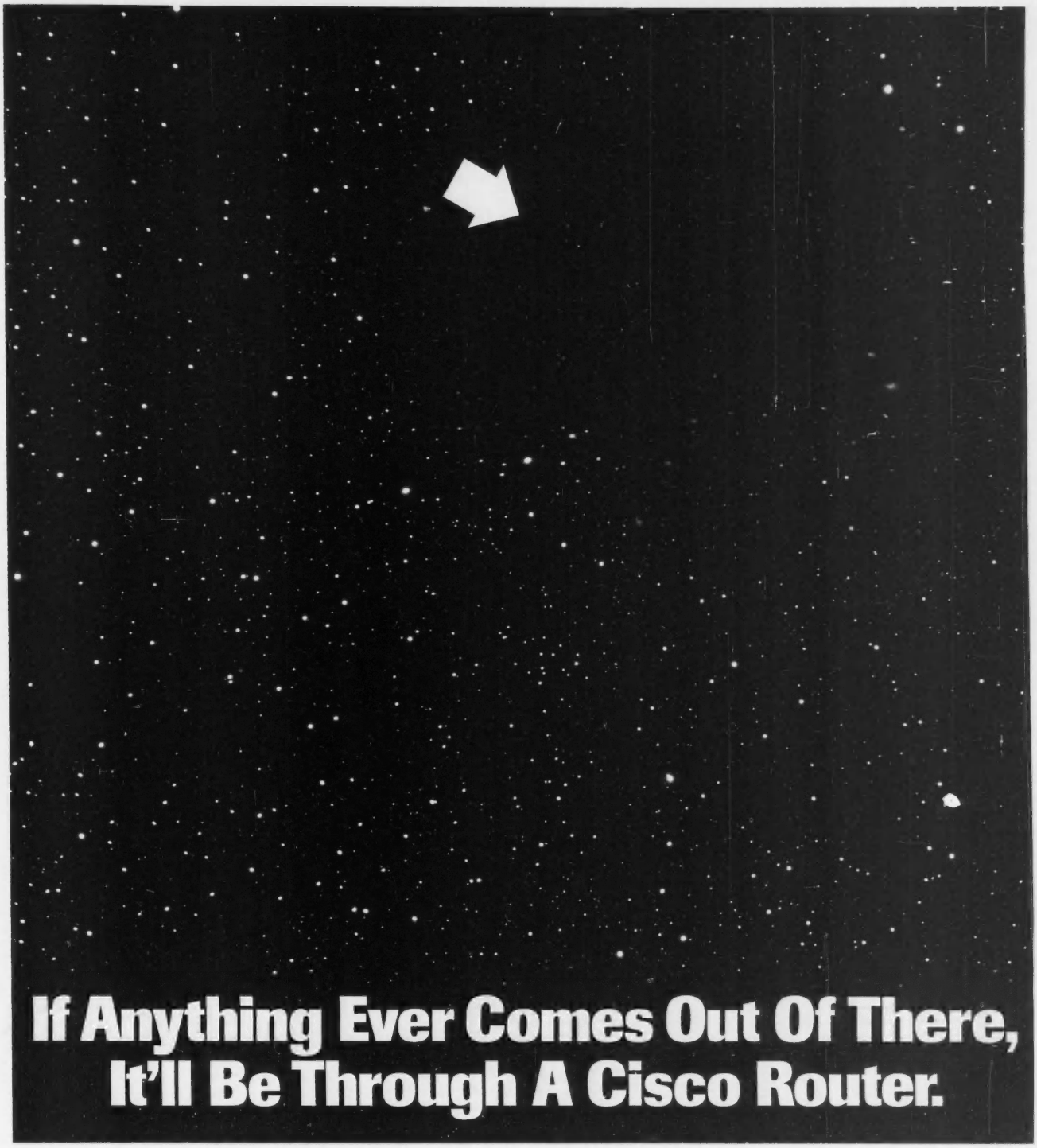
Lower prices

"It's clear there are eventual limits to how low pricing can go in existing [mainframe] technology because it's expensive to manufacture," Staedke said. "CMOS implementations of parallel processors with [IBM] System/390 capabilities offer the prospect of similar functionality with significantly lower prices."

HDS is also using existing technology to build a mainframe uniprocessor with more than 100 MIPS [CW, April 25].

Hewlett-Packard Co. said the IBM/Hitachi deal would not affect its agreement with Hitachi Ltd. to use HP PA-RISC chips in Unix workstations and servers.

"The relationship HP has is with the semiconductor and systems businesses at Hitachi," said HP spokesman Jim Christensen, "and those relationships are unchanged."



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Iceberg

CONTINUED FROM PAGE 1

Still, Peter and some customers said they remain leery of any bugs that have not yet been thawed out of Iceberg even though StorageTek claims to have resolved all outstanding software problems. Iceberg's glitch-filled history continues to "raise questions as to whether it will be reliable," Peter noted.

Other prospective clients viewed the technical delays in a more positive light. "StorageTek did it right by not releasing Iceberg until it was absolutely ready," said Wayne Pattison, director of data center operations at Kansas City Southern Railway Co. in Missouri. "I wouldn't want to be serial number 1 off the line, but I think it will be trustworthy."

"We knew [Iceberg] was a pretty complex environment and that there were a lot of technical problems that would have to be resolved," said Leonard E. Accardo, director of global information processing at Merrill Lynch & Co. in New York. Accardo said he remains bullish on StorageTek's subsystems.

BMC Software, Inc., which received Iceberg several months ago, is pleased with its performance thus far.

"We told our user group last week that Iceberg's initial performance has exceeded our expectations," said Eric Brubaker, director of MIS at the Houston-based systems software vendor. Other early Iceberg shops include MCI Communications Corp. and the Defense Logistics Agency.

Icebreaker

Back-order pileup promises fast deployment of StorageTek's Iceberg

1994 PROJECTIONS

SHIPMENTS	REVENUE*
600	$350M

* Revenue accounts for 400 units; revenue for remaining 200 will be applied to fiscal 1995

Source: Kemper Securities, Inc., Chicago

Competition remains

Nonetheless, the numerous delays have allowed competitors to surge past Iceberg, for example EMC Corp. with its Symmetrix disk array subsystems. IBM, which will introduce its first redundant arrays of inexpensive disks (RAID) subsystems next month, was able to play catch-up.

StorageTek "admitted that, in a read-intensive environment, EMC would beat them," said Nick Allen, vice president and storage director at consultancy Gartner Group, Inc. in Stamford, Conn.

Yet Allen said positive feedback from early Iceberg users has renewed the confidence of Gartner's storage clients. "Iceberg fever is starting to catch again," the analyst added.

Pattison, Accardo and Peter each said they will consider products from all three vendors before deciding on direct-access storage device (DASD) replacements.

Financial effects

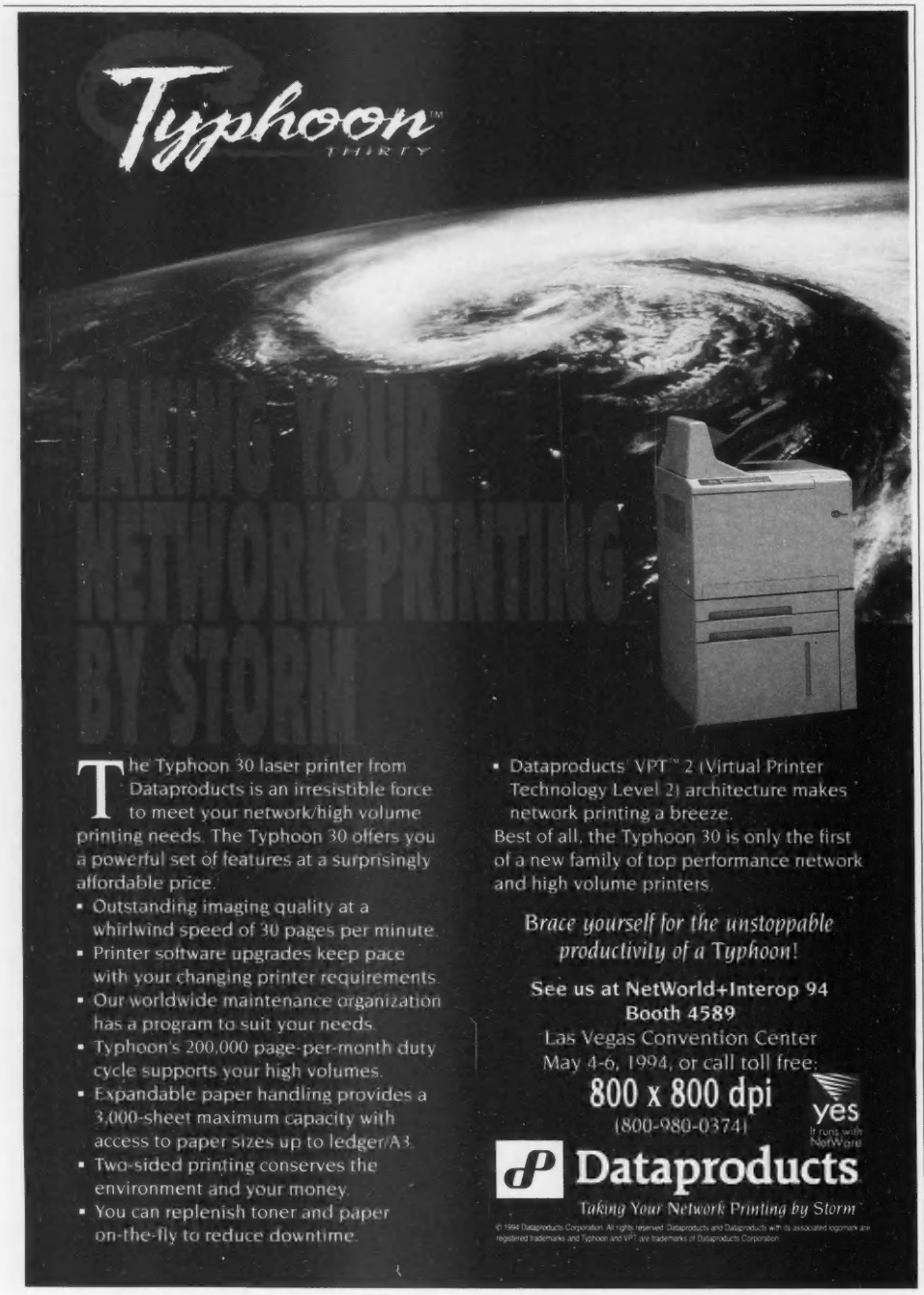
StorageTek, which expects to begin generating Iceberg revenue this quarter, continues to stand by its projection of $350 million in Iceberg sales by year's end, said Joseph Payne, an analyst at Kemper Securities, Inc. in Chicago.

Iceberg revenue will be a refreshing change for StorageTek, which posted a $19.6 million net loss for its first quarter ended April 1. For the same period, revenue remained stagnant at $335.6 million.

In addition to Iceberg, StorageTek is close to completing beta testing for its Nordique disk array subsystems. Nordique, another RAID Level 5 subsystem designed for IBM MVS mainframe environments, should begin shipping this summer; it could represent an additional $150 million — or 30% — of StorageTek's DASD revenue for fiscal 1994, said Mark C. Jordan, a financial analyst at A. G. Edwards & Sons, Inc. in St. Louis.

Furthermore, StorageTek is readying two other traditional DASD replacements. A high-capacity subsystem, code-named Kodiak, and Arctic Fox, a high-speed DASD device, are slated to begin shipping in the second half of this year, according to a StorageTek spokesman.

Still, StorageTek is expected to face increased competition as the high-end storage market heats up over the summer, when competitors such as EMC, IBM and Amdahl Corp. are each shipping disk array subsystems, Allen said.



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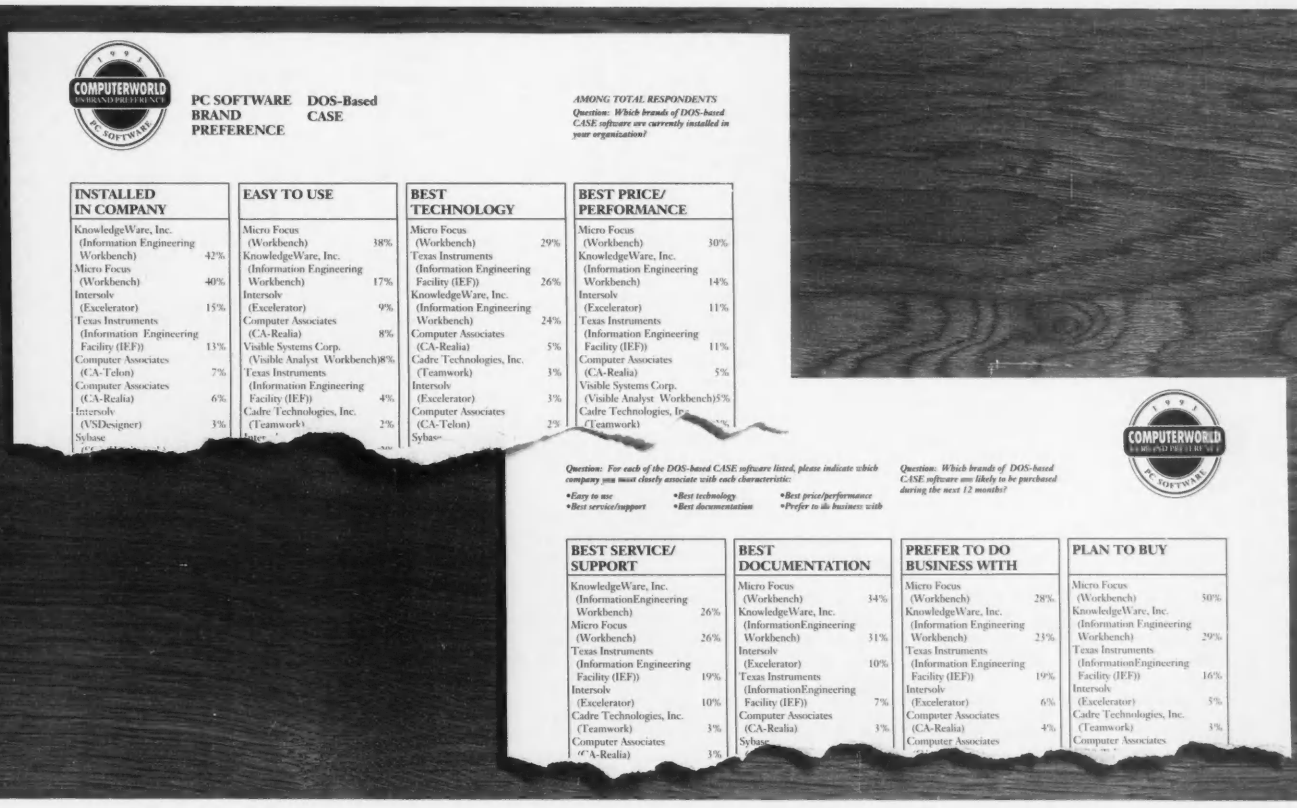

1993 COMPUTERWORLD PC SOFTWARE BRAND PREFERENCE

PC SOFTWARE BRAND PREFERENCE — **DOS-Based CASE**

AMONG TOTAL RESPONDENTS
Question: Which brands of DOS-based CASE software are currently installed in your organization?

INSTALLED IN COMPANY		EASY TO USE		BEST TECHNOLOGY		BEST PRICE/ PERFORMANCE	
KnowledgeWare, Inc. (Information Engineering Workbench)	42%	Micro Focus (Workbench)	38%	Micro Focus (Workbench)	29%	Micro Focus (Workbench)	30%
Micro Focus (Workbench)	40%	KnowledgeWare, Inc. (Information Engineering Workbench)	17%	Texas Instruments (Information Engineering Facility (IEF))	26%	KnowledgeWare, Inc. (Information Engineering Workbench)	14%
Intersolv (Excelerator)	15%	Intersolv (Excelerator)	9%	KnowledgeWare, Inc. (Information Engineering Workbench)	24%	Intersolv (Excelerator)	11%
Texas Instruments (Information Engineering Facility (IEF))	13%	Computer Associates (CA-Realia)	8%	Computer Associates (CA-Realia)	5%	Texas Instruments (Information Engineering Facility (IEF))	11%
Computer Associates (CA-Telon)	7%	Visible Systems Corp. (Visible Analyst Workbench)	8%	Cadre Technologies, Inc. (Teamwork)	3%	Computer Associates (CA-Realia)	5%
Computer Associates (CA-Realia)	6%	Texas Instruments (Information Engineering Facility (IEF))	4%	Intersolv (Excelerator)	3%	Visible Systems Corp. (Visible Analyst Workbench)	5%
Intersolv (VSDesigner)	3%	Cadre Technologies, Inc. (Teamwork)	2%	Computer Associates (CA-Telon)	2%	Cadre Technologies, Inc. (Teamwork)	3%
Sybase				Sybase			

Question: For each of the DOS-based CASE software listed, please indicate which company you most closely associate with each characteristic:

- *Easy to use*
- *Best technology*
- *Best price/performance*
- *Best service/support*
- *Best documentation*
- *Prefer to do business with*

Question: Which brands of DOS-based CASE software are likely to be purchased during the next 12 months?

BEST SERVICE/ SUPPORT		BEST DOCUMENTATION		PREFER TO DO BUSINESS WITH		PLAN TO BUY	
KnowledgeWare, Inc. (InformationEngineering Workbench)	26%	Micro Focus (Workbench)	34%	Micro Focus (Workbench)	28%	Micro Focus (Workbench)	30%
Micro Focus (Workbench)	26%	KnowledgeWare, Inc. (InformationEngineering Workbench)	31%	KnowledgeWare, Inc. (Information Engineering Workbench)	23%	KnowledgeWare, Inc. (Information Engineering Workbench)	29%
Texas Instruments (Information Engineering Facility (IEF))	19%	Intersolv (Excelerator)	10%	Texas Instruments (InformationEngineering Facility (IEF))	19%	Texas Instruments (InformationEngineering Facility (IEF))	16%
Intersolv (Excelerator)	10%	Texas Instruments (InformationEngineering Facility (IEF))	7%	Intersolv (Excelerator)	6%	Intersolv (Excelerator)	5%
Cadre Technologies, Inc. (Teamwork)	3%	Computer Associates (CA-Realia)	3%	Computer Associates (CA-Realia)	4%	Cadre Technologies, Inc. (Teamwork)	3%
Computer Associates (CA-Realia)	3%	Sybase		Computer Associates		Computer Associates	

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IBM initiatives target OS/2 desktops

By Ed Scannell
SAN FRANCISCO

Despite the continued lack of bundling deals between hardware suppliers and top application developers, IBM's Personal Software Products group last week continued its quest to gain broader desktop acceptance for OS/2.

At its developer's conference here last week, the company spelled out plans for a long-awaited version of OS/2 for Windows that will simultaneously run multiple applications acceptably in just 4M bytes of memory.

The product, called Personal OS/2 by one IBM official, is expected to be much easier for inexperienced users to install. Through a "dashboard" and three-dimensional icons, it should also be easier for users to use the operating system's more complex capabilities and manipulate applications.

"We are doing pretty well among experienced users, but we need to get away from the programmer environment and adapt [OS/2] more for new users," said Lois Dimpfel, director at Personal Software Products' Programming Center in Boca Raton, Fla. "We want to give them a simpler way to do things like read a file, print or get on-line help."

IBM said it hopes the product can keep up the sales momentum established by the first version. It is expected to enter beta testing in about 30 days with the finished version shipping in early summer.

Since mid-November, the division has shipped a little more than 500,000 copies of OS/2 for Windows in the U.S. alone. The company has now shipped a total of 5 million copies of OS/2 Versions 2.0, 2.1 and OS/2 for Windows, according to IBM officials.

Within reach

If IBM meets the prediction of International Data Corp. and sells 5 million copies of OS/2 this year, the user base would be within arm's reach of the 10 million mark.

More competitive

But more importantly perhaps, it is Personal Software Products' hope that a truer 4M-byte version of the product will encourage more hardware OEMs to bundle it exclusively with their systems — something the company badly needs to become more than a niche player against Microsoft Corp.'s Windows juggernaut.

Personal Software Products officials also said last week that the company has renamed its upcoming Workplace OS operating system to OS/2 for the PowerPC. The product, an IBM adaptation of the Mach microkernel from Carnegie Mellon University in Pittsburgh, is now expected to enter beta testing sometime in the third quarter. It is still on schedule for delivery by year's end, officials said.

While work on a version of Microsoft's Windows NT for IBM's PowerPC-based systems has already entered limited beta testing, company officials said it is unlikely the product will be commercially available before OS/2 for the PowerPC.

"We suspect they will be released at about the same time," said Miles Barel, Worldwide Workplace OS brand manager.

In a third announcement, the division also formally unveiled PC DOS 6.3 last week. Unlike Microsoft's MS-DOS 6.2, which is currently shipping, PC DOS 6.3 has a built-in compression utility. While Version 6.3 will contain IBM's SuperStor/DS compression utility, IBM said it will include a version of Stac Electronics' best-selling Stacker utility in future versions.

Microsoft is expected to provide users with a compression program that replaces DoubleSpace, which the company removed from Version 6.2 because it infringed on two patents owned by Stac.

The new version, priced at $77 for DOS 2.1 through MS-DOS 6.0 or $24 for PC DOS 6.1 users, also features built-in support for pen-based applications and PCMCIA cards. In addition, it has several fully featured utilities, including Central Point Software, Inc.'s Backup, RAMboost and Scheduling programs.

Delayed, but on the way

The Workplace Shell for PC-DOS version, initially expected in the first half of this year, has been delayed until the fourth quarter so the company can beef up its feature set. The product will now likely ship at the same time as PC DOS 7.0.

While PC DOS 7.0 will remain a 16-bit product, it will likely include lower-level multitasking capabilities. It will also have several built-in features for mobile users such as the ability to carry on a communications session while another application is on screen, Dimpfel said.

Delays ahead for Pentium systems

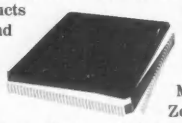
Vendors differ with Intel on chip availability

By Jaikumar Vijayan

Despite Intel Corp.'s early announcement of 90-MHz Pentium processors in March, customers will have to wait at least six more weeks for systems based on the chip to ship in volume.

Among those queried, only Dell Computer Corp. quoted a two-week delivery date.

Several vendors that have already announced products based on the high-end Pentium chip are now quoting lead times of at least six to eight weeks, and major resellers last week confirmed that there is lack of availability of the products.



"Supplies are trickling in, but I don't see volume for another 60 days at least," said Pat Ohoro, marketing director of systems at computer reseller Tech Data, Inc.

Supply and demand

Meanwhile, user inquiries for systems based on the new processors have been steadily picking up. "In the next quarter, demand will clearly outstrip supply," Ohoro predicted.

"We've had a lot of interest in Pentium models," agreed Joe Barr, networking product manager at Entex Information Services.

So far, almost every major vendor, with the exception of Compaq Computer Corp., has announced products based on the processors. Few are actually shipping.

Gateway 2000, Inc., which was among the first to announce Pentium machines, is quoting a lead time of at least 35 days for delivery. AST Research, Inc., which announced a Pentium product coinciding with Intel's March unveiling, said it will start shipping in July — or possibly even August. Companies such as Micron Computer, Inc., Zeos International Ltd. and Acer America Corp. all have similar lead times.

"It's going to take us probably four to six weeks to get into any kind of meaningful production" on Pentium 90-MHz systems, said Dave Kirkey, vice president of marketing at Advanced Logic Research, Inc. in Irvine, Calif.

According to some sources, one possibility for the system delays could be the relatively slow availability of associated chip sets, which provide Peripheral Component Interconnect (PCI) and dual-processor multiprocessing overdrive support.

Intel, however, denied any availability problems. The company said the processor was shipping in full volume and added that it does not anticipate any future delays. Intel also said there were no supply problems as far as its Neptune PCI chip set was concerned. "We are shipping in volume, and we are meeting all of our customer demands," said a spokeswoman at Intel.

PCI chip issues

Intel is the largest supplier of PCI chip sets for Pentium processors and also makes motherboards with integrated PCI support, CPU and memory.

However, some systems manufacturers use motherboards designed from the ground up for the new CPU and integrate PCI support using chip sets from outside vendors. But there has been limited availability of PCI support sets from chip set vendors such as Opti Computer, Inc. in Santa Clara, Calif., and Forex Computer Corp. in San Jose, Calif.

"A lot of PC manufacturers are frustrated with PCI availability," said C. O. Hung, director of sales and marketing at Forex. "If you want the motherboard bundled with CPU memory and PCI support from Intel, there is no problem. However, they put you on allocation if you just want the PCI chip sets."

Intel uses price cuts to lure I486 users to Pentium. See page 43.

Microsoft, TI to create repository

By Melinda-Carol Ballou

■ **Microsoft Corp. and Texas Instruments, Inc. are expected to announce this week that they will join forces to create an object-oriented repository. The move seeks to combine the traditional strengths of each company: control of the desktop and enterprise development.**

Early design specifications and application programming interfaces for the repository are expected to be made available this fall to independent software vendors, company sources said. But users will have to wait two years before the repository itself is expected to be available.

If a successful product does emerge, analysts said, it could help developers reduce the confusion of client/server development by providing a centralized location for application components and objects.

Rocky road

The road to a repository will be far from smooth for Microsoft and Texas Instruments. In the past, vendors have refused to standardize on competitive repositories.

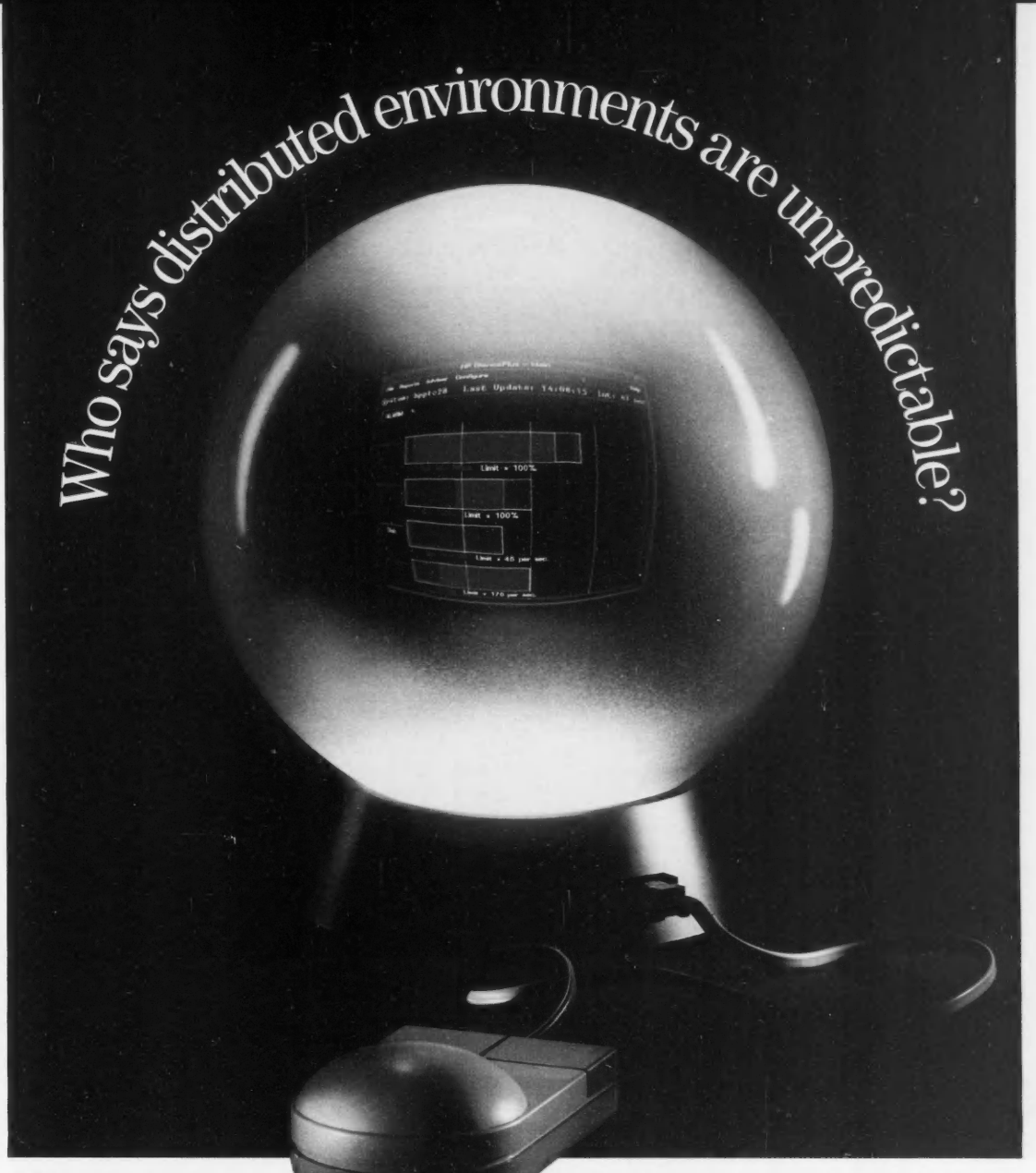
Industry and internal sources said TI developers are working with Microsoft to build an information model for the Microsoft repository. It will include an engine to handle a range of functions.

Sources said the repository will initially be available on Microsoft's Windows NT. It is ultimately expected to reside on top of the object file system for Cairo, Microsoft's planned object-oriented operating system.

"On the positive side, I'm convinced that client/server isn't going to go anywhere without a repository, so they're on the right track," said Ed Acly, an analyst at International Data Corp., a Framingham, Mass., consulting firm, when informed of the deal. "But it's far from clear whether it will fly or not."

Acly added that TI's Information Engineering Facility is not object-oriented and that melding the two companies will not necessarily address the weaknesses of either.

Who says distributed environments are unpredictable?



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Desktop

CONTINUED FROM PAGE 1

vironment."

In their move to open client/server systems, corporations deal with dozens of vendors while trusting none of them to provide enterprise-level solutions, users said. Yet at the same time, users still need consultation and direction to implement their downsizing strategies.

Winning over the market

"Both Microsoft and Novell realize that going through Egghead [Discount Software] is not going to drive enterprise-level solutions," said Phil York, vice president of technology research and alliances at SHL Systemhouse, Inc., an integrator that works with both vendors.

"What they now provide with their partner program is a way to effectively encourage the market to adapt their technology more systematically, to move it up the food chain," he said.

Users emphasized, however, that they do not want a systems integrator to function as an intermediary between them and their major client/server systems suppliers.

Shepard said his company makes wide use of value-added resellers, consultants and integrators for finite projects. However, he said it makes sense over the long term to rely on one's internal developers backed up by training, education and support provided by the primary client/server systems vendors.

The problem, users said, is that vendors such as Novell and Microsoft have yet to fill the gap with direct support and product information services on an enterprise level.

"They still tend to act like shrink-wrapped software vendors," leaving the customer in the lurch when it comes to "design support, architectural support, defining the environment and how best to use products and what not to do with them," Shepard noted.

Users need insight

Users said they want vendors to brief them on product strategy and delivery timetables so they can better plan their technology strategies.

"All we want them to say is what they're doing and for them to do it well," remarked David Sherr, first vice president at Shearson Lehman Brothers, Inc. in New York.

Novell has responded to some of the above needs with its new support programs (see box at left).

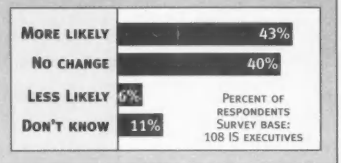
IBM has established an expectation of a certain level of service, creating a void in the client/server arena, said Tom Gildea, vice president of business information services at Helene Curtis, Inc. in Chicago.

Sherr said the combination of vendors doing what they do best, with systems integrators playing a consulting role, all comes down to execution. However, users expressed skepticism over whether these efforts would play out as planned.

"One-stop shopping has appeal," Sherr said. "It depends on how good the stop is."

Full solution

If Novell increased its level of support for AppWare, UnixWare and WordPerfect Office, would your company consider Novell to be its full-solution supplier of client/server systems?



Source: *Computerworld* Database Division, Framingham, Mass.

In a nutshell

Novell's Corporate Account Program will provide more direct, ongoing support to corporate customers or major accounts that spend at least $250,000 on Novell products annually.

Key features include the following:

- Early information on product architectures and technologies.
- Participation in special interest groups focusing on a specific Novell technology, such as document management or telephony.
- Workshops on systems design, development and implementation using Novell products.
- Access to Enterprise Services Division consultants at Novell.
- An on-site Novell account manager.
- A 10% discount on corporate NetWare purchases in 10-node packages.
- Prerelease products for evaluation.
- Priority status for beta-site selection.

First things first

Joyce Young, director of information systems at Tellabs, Inc. in Lisle, Ill., has found herself in the fortunate position of starting a client/server initiative by first creating the architecture.

When Young joined Tellabs earlier this year, the telecommunications supplier had not yet migrated its systems to a distributed platform, so her first order of business was to work on the plan.

Tellabs' Joyce Young

Amy Goldwin

In Tellabs case, there will be three architectures, or models, that will govern business applications, data and the technical platforms. Young said some companies may hesitate to take on an architecture project because those words can imply a massive, long-term job. But she insists it can be done in short order.

"I wouldn't recommend taking six months," Young said, adding that Tellabs' business applications architecture is now complete. "We crunched to get this done, because we have stuff to do."

— Rosemary Cafasso

Corporate

CONTINUED FROM PAGE 1

consistent plan so applications are interoperable and development costs are under control.

In contrast, the first group of client/server applications deployed at American used several different operating systems, Lewis said. "What we have is legacy client/server systems," she noted.

"Five years ago, we were not really concerning ourselves with the coherency of the architecture," Lewis said. "Each team was focusing on the needs of their particular application."

An increasing number of companies with client/server projects under way are just now realizing they need a blueprint to really make them work, said Patricia Seybold, president of Patricia Seybold Group, which hosted its annual technology forum last week in Cambridge, Mass.

"We are seeing customers rolling out [client/server systems] with up to 200 seats and now saying we have to go back and redo the infrastructure," Seybold said.

Architecture is critical

At many companies, what often began as a few isolated client/server pilot projects grew into a collection of systems as the concept of client/server computing grew in popularity. As companies begin taking client/server computing enterprisewide, the need for an architecture is all the more critical, observers added.

Typically, architectures can include the basic system infrastructure, such as networking, operating systems and hardware platforms. They can also cover a broader set of issues by providing development guidelines, including recommended tools and data management and access methods.

With an architecture, companies can realize cost savings by avoiding the reinventing-the-wheel syndrome and achieving better integration.

Users are finding other costs savings associated with architectures, as well. Chase Manhattan Bank NA, for example, has established Sybase, Inc.'s database management system as one of its key data management platforms. Because of the volume of Sybase licensing, Chase has a discount program with the company, said Jonathan Vaughan, a vice president in IS.

The bank established a working group to put client/server guidelines in place two years ago after it saw a few isolated applications pop up, Vaughan said.

"The two earliest projects were from completely different locations," Vaughan said. "One was an internal systems tool using a LAN-based database system. The other was a customer service system in Delaware, with OS/2 on workstations and leaving the core functionality on the host."

Tracking the differences

Vaughan said Chase not only saw two different platforms but also two different approaches to client/server models. "We saw [client/ server] as something that would increase across the board," Vaughan said.

Martin Garvey, an analyst at Meta Group, Inc. in Westport, Conn., said he also has tracked an increase in modeling activity among clients. "It [first] took place departmentally," Garvey said. "All of a sudden you had new apps being developed, and [the question was], 'Where's the architecture?' People didn't think about it."

"I don't think anyone is scrapping what they've done," Schay added. "But the consequences are that some of the technologies [already installed] will be difficult or expensive to tie into this new architecture."

Five steps to take before a client/server launch

- **Identify the type of application** — Transaction processing, decision support or communications.
- **Determine the network profile** by the traffic flow this application will likely produce.
- **Select the core system pieces,** including hardware, operating system and user access mechanism.
- **Choose a client/server scheme** that best suits the application, such as the classic model where the client handles presentation and the server manages functional logic and data storage.
- **Decide on an implementation model** by picking the appropriate number of "tiers" the system should have. For example, if legacy data is central to this application, a three-tiered model including the host database is most appropriate.

SOURCE: PATRICIA SEYBOLD GROUP

Apple servers draw mixed reviews

By Mark Halper

User reaction to servers introduced by Apple Computer, Inc. last week was lukewarm, as praise for the systems' power was tempered by software concerns.

Although Apple trumpeted the PowerPC-based Workgroup Server 6150, 8150 and 9150 for their built-in support of Novell, Inc.'s NetWare network operating system [CW, April 25], the company said NetWare will not be native on the servers until year's end. This is because Apple will offer NetWare Version 4.1, which is slated to ship in the fourth quarter.

PowerPC servers hit streets

MODEL	SPEED	MEMORY	STORAGE	PRICE
6150	60 MHz	*8M bytes	500M bytes	$4,219
8150	80 MHz	*16M bytes	1G byte	$7,459; $8,499 w/AppleShare
9150	80 MHz	**16M or 24M bytes	2G bytes	$9,229; $10,269 w/AppleShare

► All models are based on the PowerPC 601 microprocessor and are available today.
* expandable to 72M bytes
** expandable to 264M bytes

Novell already offers a NetWare Loadable Module that supports Macintosh clients, but it runs only on Intel Corp.-based servers, said Apple product manager Gary Schare.

Users such as Nick Kontis, unit manager at Southern California Edison Co. in Rosemead, Calif., said he will wait and see how well Apple implements NetWare. Until then, he will continue to rely on some 30 Intel-based boxes that act as servers in various networks comprised of some 4,000 PCs and Macintoshes.

Upgrades available

Apple is also offering upgrade boards for its 68040-based Workgroup Servers and Quadra systems. Upgrade prices range from $1,259 to $2,499.

"It would be a piece of heaven if the NetWare release on the [Workgroup Servers] would seamlessly operate with the existing architecture we have, but we don't know yet that it will," Kontis remarked.

Nothing compelling

Roger Bundy, manager of computing platforms at Taco Bell Corp. in Irvine, Calif., said that until Apple makes NetWare native on the servers, he has no compelling reason to buy one.

He will, in the meantime, continue to use Intel-based servers to support about 800 Intel desktop and 600 Macintosh desktop boxes, he said.

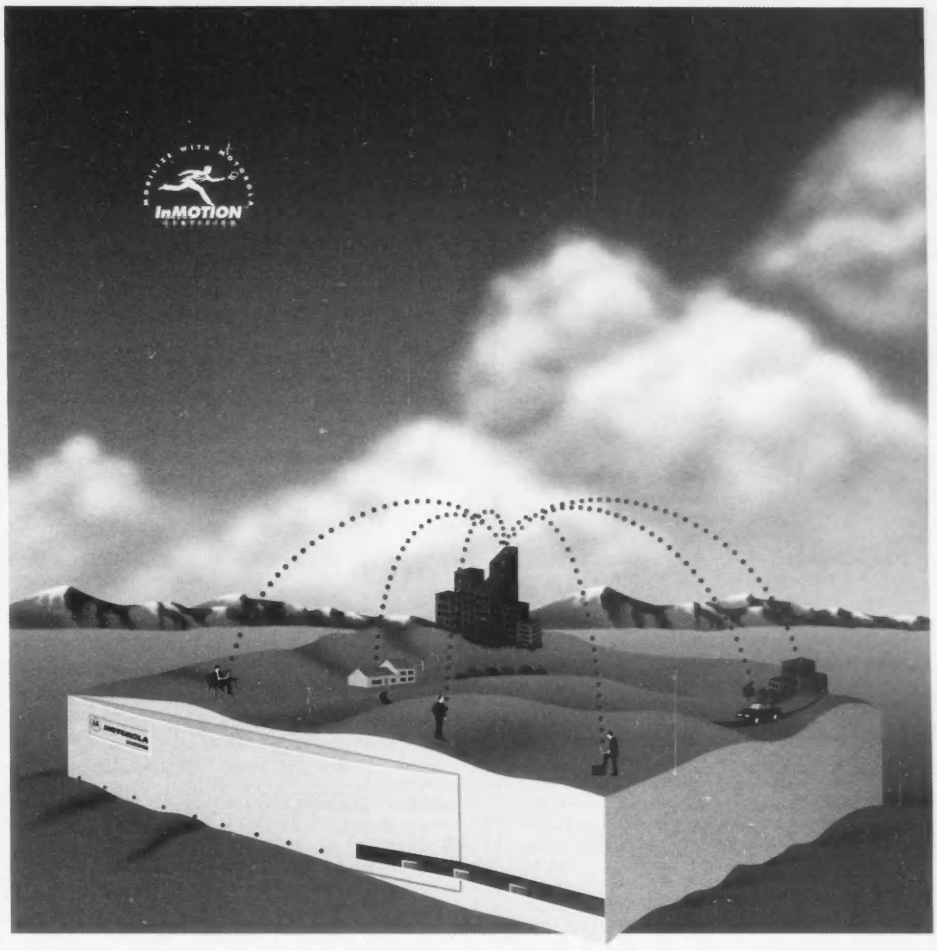
If the new Workgroup Servers prove to be worthy NetWare boxes, Bundy said he would be eager to install them because he has found Apple systems easier to set up and support compared with Intel systems.

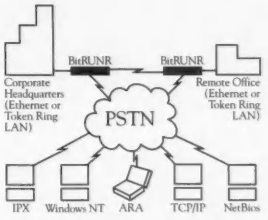
Another Macintosh user, Arthur Tisi, chief systems officer at the Metropolitan Museum of Art in New York, said he will continue to use Intel-based servers even for his Macintosh clients.

Tisi explained that he has already soured on the 2-month-old PowerPC desktop offerings because his own testing has shown that they run Windows software at unacceptably low speeds. And there is still little native software that takes advantage of the Power Macintosh line.

His decision not to purchase one of the new servers "fundamentally gets down to the issue of the PowerPC. We had one on evaluation in the hopes we would buy some, but it ran [Windows] like a 286 or worse," he noted.

Prices for the servers range from $4,219 to $10,269.





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News Shorts

IBM executive resigns unexpectedly

Gerald Czarnecki, the human resources chief in charge of paring down IBM's work force, quit abruptly last week. He reportedly was under pressure from IBM Chairman Louis V. Gerstner Jr. to move more quickly in his task. Of the 35,000 employees IBM hopes to lay off by year's end, only about 7,000 have left.

Commercial cellular data service debuts

Bell Atlantic Mobile, the cellular arm of Bell Atlantic Corp., last week rolled out the first commercial application of Cellular Digital Packet Data (CDPD) in Pittsburgh and the Washington/Baltimore corridor. Bell Atlantic officials said they expect their CDPD-based Air Bridge service to be up and running in the 61 largest U.S. markets by year's end. It will cost some 16 cents per message, depending on volume.

TI to unwrap more notebooks today

Texas Instruments, Inc. will announce today the TravelMate 4000M series of notebook computers. The series will feature SCSI II, a built-in Musical Instrument Device Interface (MIDI) port, 16-bit sound, Intel Corp.'s Indeo Video and a portable docking station with a built-in CD-ROM drive. Depending on the configuration and screen type, models weigh between 5.9 and 6.4 pounds. Prices on the 486-based line start at $2,149 and top out at $5,299 for a 25/75-MHz DX4-based model with a 340M-byte hard drive and a thin film transistor active-matrix color screen.

Working on the (electronic) highway

The U.S. Advisory Council on the National Information Infrastructure last week launched three "Mega-Projects" intended to provide a framework for the council's work on the so-called information superhighway. One will determine goals for key applications in health care, electronic commerce and public safety; the second will examine issues of access and cost; and the third will study issues related to the rights of users and vendors. The projects are chaired by a combination of government and computer industry representatives.

Modem maker agrees to settle suit

Hayes Microcomputer Products, Inc. in Norcross, Ga., has agreed to settle **Federal Trade Commission** charges that it made false and misleading claims in an advertising campaign that touted the escape sequence of one of its modems. Hayes' ad, which compared other technologies to a time bomb, allegedly misrepresented its technology as the only escape method available that doesn't create a substantial risk of data transmission failure. The proposed settlement would prohibit Hayes from making similar claims for its modems in the future.

Lotus' electronic forms tool to debut

Lotus Development Corp. plans this week to unveil its electronic forms software, Lotus Forms, with shipping scheduled for June 27. The software will allow users to design, route and track electronic forms, such as mortgage applications. Users will also be able to route the forms both inside and outside their companies using Lotus' CC:Mail or Notes or Microsoft Corp.'s Mail. The product is aimed at competing packages from Delrina Corp., JetForm Corp. and WordPerfect Corp.

SHORT TAKE The Clinton administration, in a move to counter Japan's dominance of a technology market, last week announced a five-year plan to spend $580 million helping U.S. companies build factories to produce flat-panel computer screens.

Carriers to demo coast-to-coast SMDS network service at Interop

By Ellis Booker

■ A group of local and interexchange carriers will demonstrate Switched Multimegabit Data Service (SMDS) running from one coast to the other this week at the Networld/Interop '94 show in Las Vegas.

SMDS is a "connectionless" switched public network service, ranging in speed from 56K to 34M bit/sec.

Participating in the demo will be Pacific Bell, MCI Communications Corp., GTE Telephone Operations and Bell Atlantic Corp. — all members of the National SMDS Inter-Carrier Interface Consortium. The carriers will demonstrate several applications, including Internet access, as well as access to medical images and video clips.

Dick Shimizu, Pacific Bell product manager, said the event will show that the Inter-Carrier Interface standard, finalized in March by Bellcore, works.

"This begins the process of making SMDS a nationwide service," said Shimizu, who is also chairman of the consortium.

Glimpse of tomorrow

For Pacific Bell, which now offers SMDS in eight of its 10 local access transport areas (LATA), the event also telegraphs future service announcements, such as a plan with MCI to provide inter-LATA SMDS to some test customers in June. MCI is targeting general availability for this service in September.

"For a ubiquitous data network, it has a lot of potential, particularly because it ... does not require permanent virtual circuits," said Charles Baker, president of Telecommunications Engineering, Inc. in Richardson, Texas.

Baker observed that the recently codified switched virtual circuit specification for frame relay might be years away from implementation by hardware vendors and carriers. But those already using SMDS for a metropolitan-area network said nationwide connections could not come fast enough.

"How important are coast-to-coast connections? The answer is, 'extremely,'" said Joe Mambretti, director of the office of strategic technologies at the University of Chicago and acting director of the new Chicago Research and Education Network (CREN) Association.

Last week, the CREN, along with the Argonne National Laboratory and Fermi National Accelerator Laboratory, announced plans to use SMDS to connect the three institutions. The network, due to be finished in a month, will support high-resolution imaging, videoconferencing and high-performance computing applications.

Yet Mambretti said his long-term plan is to use SMDS as a "stepping-stone" to Asynchronous Transfer Mode (ATM) networking because "ATM is scalable, using the same equipment." ATM will initially support speeds of 45M, 155M and 622M bit/sec. and will eventually support gigabit-speed networks.

High-speed net switches to steal show. See page 20.

Switches

CONTINUED FROM PAGE 1

tron Systems, Inc. and Chipcom Corp. on the technology curve, analysts said. They said this was manifested in SynOptic's recent posting of a 20% drop in earnings for the first quarter compared with the same period last year.

"SynOptics has been woefully inept at providing a migration path for its installed base, but this puts them on track," said Charlie Robbins, an analyst at Aberdeen Group in Boston.

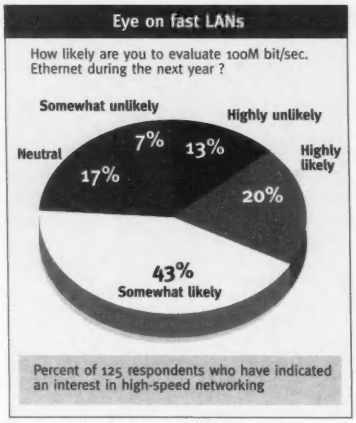
In conjunction with the SynOptics announcement, Intel Corp. will unveil the first 10M/100M bit/sec. Ethernet adapter card for DOS-based PCs. The $499 card will initially be bundled with the LattisSwitch and will be generally available in the third quarter. The switch and adapter are the first fruits of the two companies' joint development effort to develop interoperable 10M/100M fast Ethernet products, which was announced in December.

Economical choice

The combination of Ethernet switching with fast Ethernet could provide a more cost-effective means of meeting their bandwidth needs than Fiber Distributed Data Interface (FDDI) and Asynchronous Transfer Mode (ATM), users said.

"Our long-term vision is ATM, but it's too expensive at the moment. So fast Ethernet is definitely something we are interested in, and products are finally coming out that support it," said Larry Quinlan, manager of LAN services at Deloitte & Touche in Nashville.

"We're also very interested in switching because of this whole era of workgroup computing that we've entered. Put the two together, and we're very interested," he added.



Source: Sage Network Research, Inc., Natick, Mass.

SynOptics site Frank Russell Co. in Tacoma, Wash., plans to evaluate the fast Ethernet switch because "ATM is still another year or so away from prime time, and we don't think FDDI will remain a mainstream technology for long," said Bill Branson, senior network engineer.

In an effort to ease users' manageability concerns, SynOptics will also unveil an update of its LAN management platform that will allow users to configure mixed shared media and switched networks via an object-oriented graphical user interface.

"Optivity 5.0 is nice because there has definitely been a perception that when you move to fast Ethernet and switching, you kind of have to throw these [virtual networking] capabilities out the window," Branson said.

SynOptics will also show a 10M bit/sec. switch and two 10-port fiber-based switches at prices starting at $8,995. Optivity 5.0 will ship in June for $5,995.

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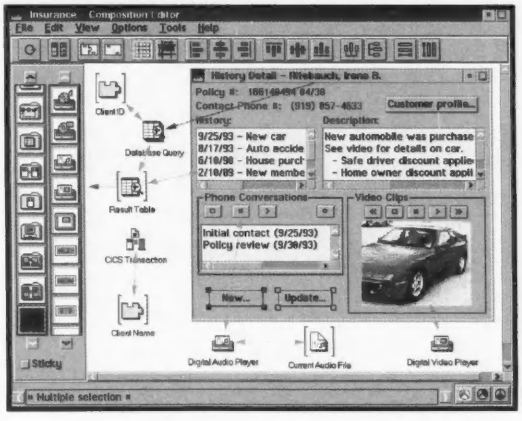

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High-speed net switches to steal show

By Stephen P. Klett Jr.
LAS VEGAS

Attendees at this week's Networld/Interop '94 show in Las Vegas will see a cornucopia of products covering the full range of networking technology. Ethernet switching and high-speed networking hardware, however, are expected to garner the most user mind share, observers said.

For example, Ungermann-Bass, Inc. and SynOptics Communications, Inc. will unveil switches based on Asynchronous Transfer Mode (ATM) and "fast" Ethernet technology, respectively. UB's ATM strategy will be based on a 16-port switch that sources said will carry an aggressive price of approximately $2,000 per port. SynOptics, meanwhile, will launch the LattisSwitch 28000 hub family, which consists of two models offering either 10 or 18 ports.

3Com Corp. will show a stackable hub platform called SuperStack that mixes Ethernet, Token Ring, SNA and Fiber Distributed Data Interface environments at prices starting at $60 per managed port. Hub, router and switching modules can be mixed and matched in a single stack, conserving valuable floor space in small workgroup and remote-office environments. 3Com will also outline its plans to provide "fast" Ethernet and ATM modules by year's end.

Vendors will team up to ease user fears about high-speed interoperability. The Fast Ethernet Alliance will demonstrate a 100M bit/sec. Ethernet network based on the 100Base-X standard using equipment from eight different vendors, including Digital Equipment Corp., Grand Junction Networks, Inc. and Standard Microsystems Corp. The 100VG-AnyLan Forum will hold a similar demonstration with equipment from, among others, AT&T Corp., Hewlett-Packard Co., IBM, Novell, Inc. and Proteon, Inc.

Not to be left out, ATM proponents Fore Systems, Inc., Sun Microsystems, Inc. and Cisco Systems, Inc. will show interoperable products based on the Switched Virtual Circuit ATM protocol. And Wellfleet Communications, Inc. and Proteon will conduct a Data Link Switching interoperability demonstration.

Also on tap...

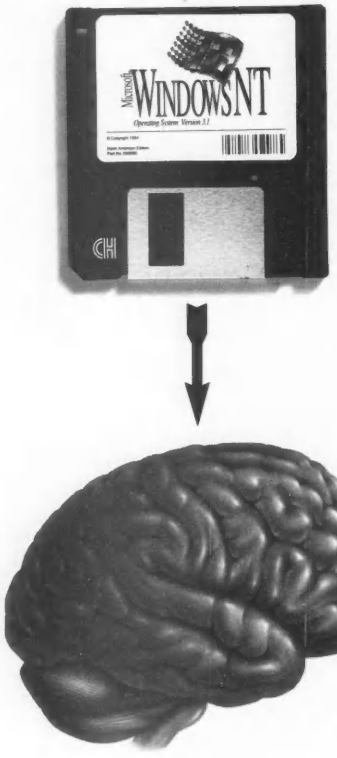
Companies looking for a corporatewide scheduling package may be interested in a new version of CaLANder from Microsystems Software, Inc. in Framingham, Mass. Release 3.0 takes care of redundant directory administration by natively using the directory services built into Lotus Development Corp.'s CC:Mail, Microsoft Corp.'s Mail and Banyan Systems, Inc.'s Vines network operating system.

The systems already support Novell's messaging, but it does not currently have links to IBM Profs, the leading mainframe messaging and group scheduling system.

Other announcements will include the following:

- HP will unveil a family of low-end servers for its NetServer line called the HP NetServer LC Series. It includes three models equipped with either a 66-MHz Intel Corp. 1486DX2, 100-MHz 486DX4 or 66-MHz Pentium processor; six expansion slots, including a Peripheral Component Interconnect bus master slot; and 16M bytes of internal memory. Prices will start at $2,629.
- Gandalf Technologies, Inc. in Cherry Hill, N.J., said it will unveil an Integrated Services Digital Networks-based bridge to provide remote sites with transparent access to corporate data up to 40 times faster than conventional dial-up modem connections.
- D-Link Systems in Irvine, Calif., will introduce several products, including an IPX/IP-based router, "fast" Ethernet hubs and adapters, RISC-based bridges and an Ethernet print server.

Lannet simplifies intelligent hubs. See page 63.



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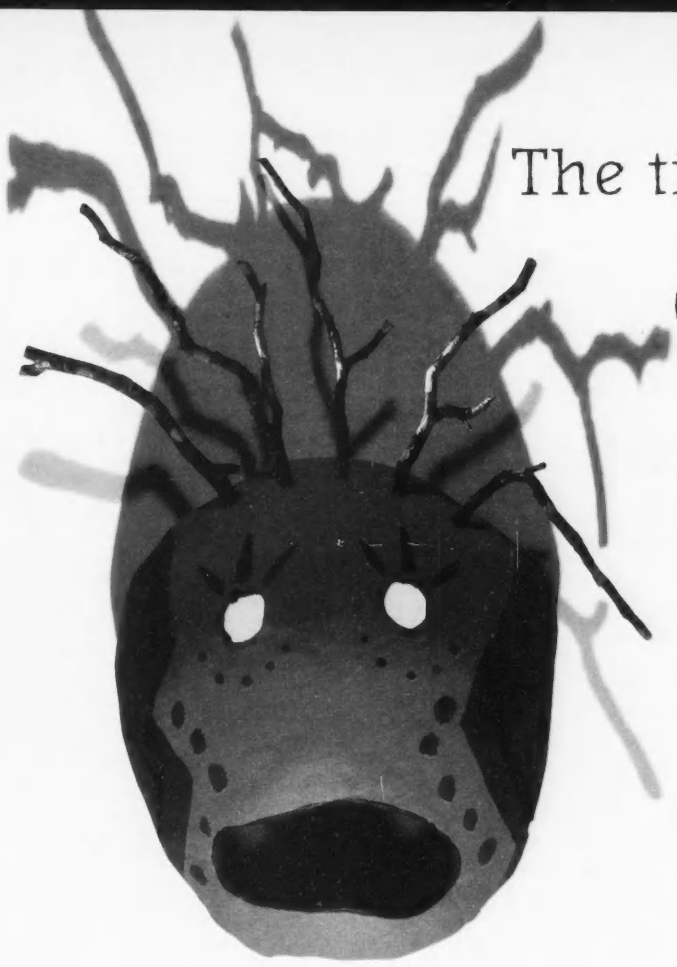

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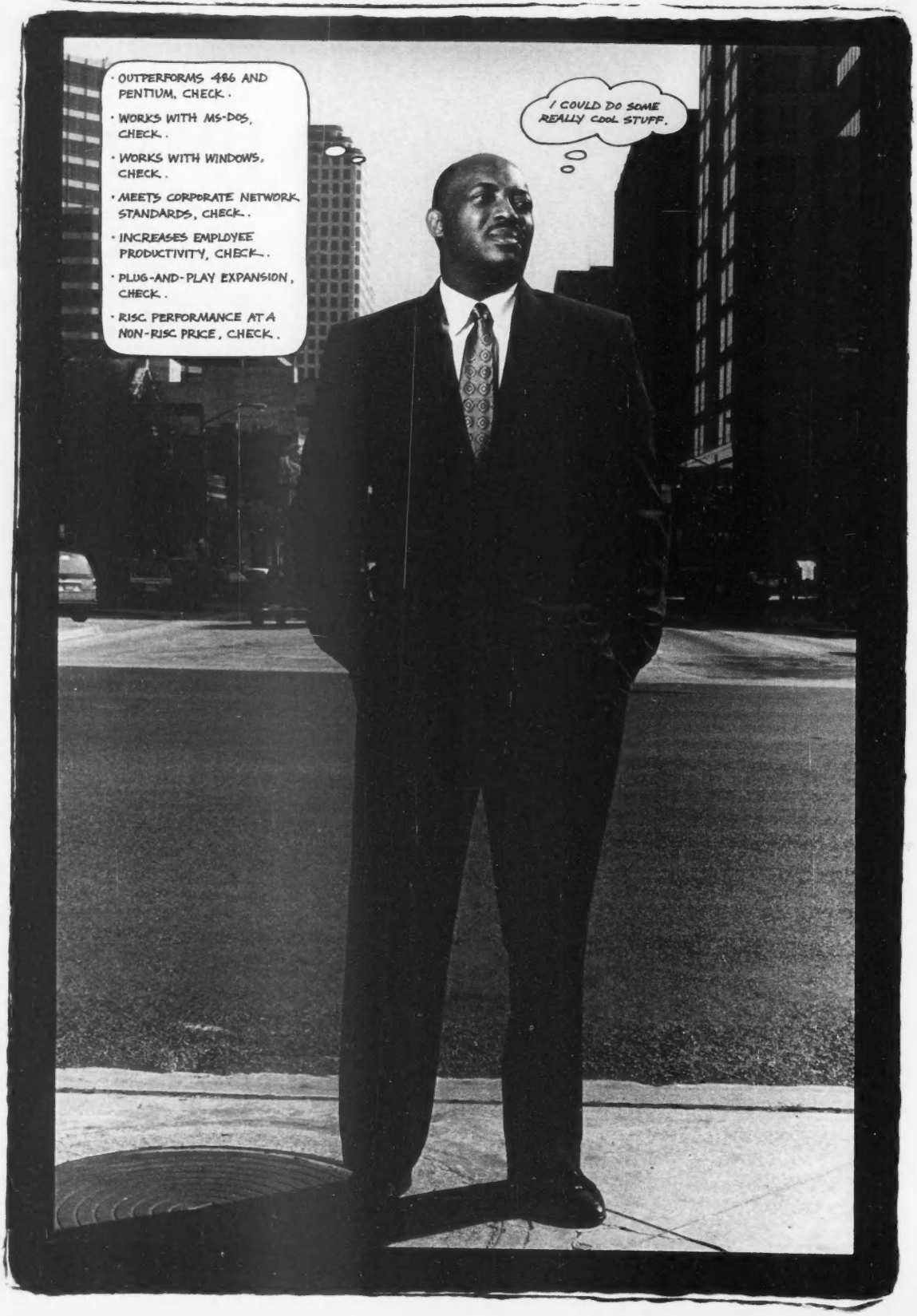
· OUTPERFORMS 486 AND PENTIUM, CHECK.
· WORKS WITH MS-DOS, CHECK.
· WORKS WITH WINDOWS, CHECK.
· MEETS CORPORATE NETWORK STANDARDS, CHECK.
· INCREASES EMPLOYEE PRODUCTIVITY, CHECK.
· PLUG-AND-PLAY EXPANSION, CHECK.
· RISC PERFORMANCE AT A NON-RISC PRICE, CHECK.
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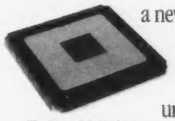
The power of Apple, IBM and Motorola.

At the heart of Power Macintosh is the PowerPC™ 601 microprocessor: the first of a new family of ultra-high-performance RISC chips developed in a unique three-year collaboration between Apple, IBM and Motorola.



The PowerPC 601 has a lot of power inside it: the combined resources of IBM, Motorola and Apple.

The RISC technology of Power Macintosh brings a whole new level of performance to personal computing. Software written to take advantage of its unique new capabilities, in fact, will run significantly faster than the same programs written for 486 or Pentium processor-based PCs.

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The power to run MS-DOS, Windows and Macintosh software.

Many Power Macintosh configurations come bundled with SoftWindows™ from Insignia Solutions, an innovation that lets Power Macintosh run hundreds of off-the-shelf MS-DOS and Windows applications at 386 and 486 performance levels. (Of course, Power Macintosh runs thousands of Macintosh productivity programs, too.)

This is just the most recent example of Apple's commitment to making it easier for MS-DOS and Windows users to take advantage of Macintosh innovations.

The power of RISC for as little as $1,819.*

These days, the whole personal computer industry is buzzing about the potential of RISC processor technology in PCs.

"My next computer will be a PowerPC. I was using Intel-based machines long before the PC was a glimmer in IBM's eye, but as Emerson said, foolishly held consistency is the hobgoblin of little minds.... It's time for a change, and the time is now," wrote Bill Machrone in *PC Week*. "That next machine will probably wear an Apple logo.... Apple appears to be a good six months ahead of IBM in terms of [PowerPC] product development and software integration."

Power Macintosh	6100/60	7100/66	8100/80
Processor	PowerPC 601	PowerPC 601	PowerPC 601
Speed	60 MHz	66 MHz	80 MHz
Memory	8MB to 72MB	8MB to 136MB	8MB to 264MB
Expansion slots	1 PDS or NuBus	3 NuBus	3 NuBus
Hard disk storage	160MB or 250MB	250MB or 500MB	250MB to 1GB
Video support	DRAM	DRAM, VRAM 1MB to 2MB	DRAM, VRAM 2MB to 4MB
Networking	Ethernet	Ethernet	Ethernet
Apple Price	From $1,819	From $2,899	From $4,249

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From left, the new Power Macintosh 8100/80, Power Macintosh 7100/66 and Power Macintosh 6100/60.

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Apple

Effective 3/14/94. Apple Price includes the Power Macintosh 6100/60 with 8MB of memory and a 160MB hard drive. For the sake of custom configuration, keyboard, monitor and mouse are sold separately. Unless bundled with a particular configuration, SoftWindows must be purchased separately. Retail prices may vary depending on location. *©1994 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh and "The power to be your best" are registered trademarks of Apple Computer, Inc. AppleScript, Macintosh PC Exchange, Power Macintosh, QuickTime and TrueType are trademarks of Apple Computer, Inc. PowerPC is a trademark of International Business Machines Corporation, used under license therefrom. Windows is a trademark of Microsoft Corporation, and SoftWindows is a trademark of Microsoft Corporation used under license.*

Information Builders offers Windows-based app for Focus line

By Rosemary Cafasso

Information Builders, Inc. in New York last week rolled out its first Windows-based application development and report writer tool for its Focus product line.

The company's goal is to do a better job of opening up the host-based data to end users, a much needed move that was a long time coming, customers and analysts said.

Information Builders' Focus line consists of host databases and the Focus fourth-generation language tool, as well as an expert system and object-oriented development platform. Launched in 1976, Focus has been used to create about 200,000 host-based applications at about 8,000 customer sites, according to the company.

Focus Reporter for Windows allows users to create reports and design query applications to access data in Focus systems with a graphical, menu-driven format. The software also comes bundled with an Open Database Connectivity driver and interfaces to Microsoft Corp.'s SQL Server, IBM's DB/2 and Oracle Corp. and Teradata Corp. databases. The Focus development language is the behind-the-scenes driver to the application development.

British Gas PLC, a longtime Focus user, is converting several hundred beta copies of Focus Reporter for Windows to production versions. It plans to make the tool a key component of the company's "standard architecture for corporate data access," said Roxane Harker, manager of office systems.

Harker said British Gas is staging Focus mainframe data on a mix of Unix server platforms and creating data warehouses for users to access with Focus Reporter.

"We need to get users access to corporate data by pointing and clicking," Harker said. She said she expects this tool to help fill "too big a gap" between the time a user requests data and when information systems is typically able to provide it. "If they have a problem on Monday morning, they can't wait a few weeks" for IS, Harker added.

Warehouse on the way

Information Builders is readying an IBM OS/2-based data warehouse that it plans to roll out by year's end, sources said. David Feldstein, vice president of the company's micro products division, confirmed that a warehouse project is underway but declined to provide details.

Other offerings

Information Builders offers other Windows-based query and executive information system tools, but the tools do not target report writing, a key function for pulling data out of host systems.

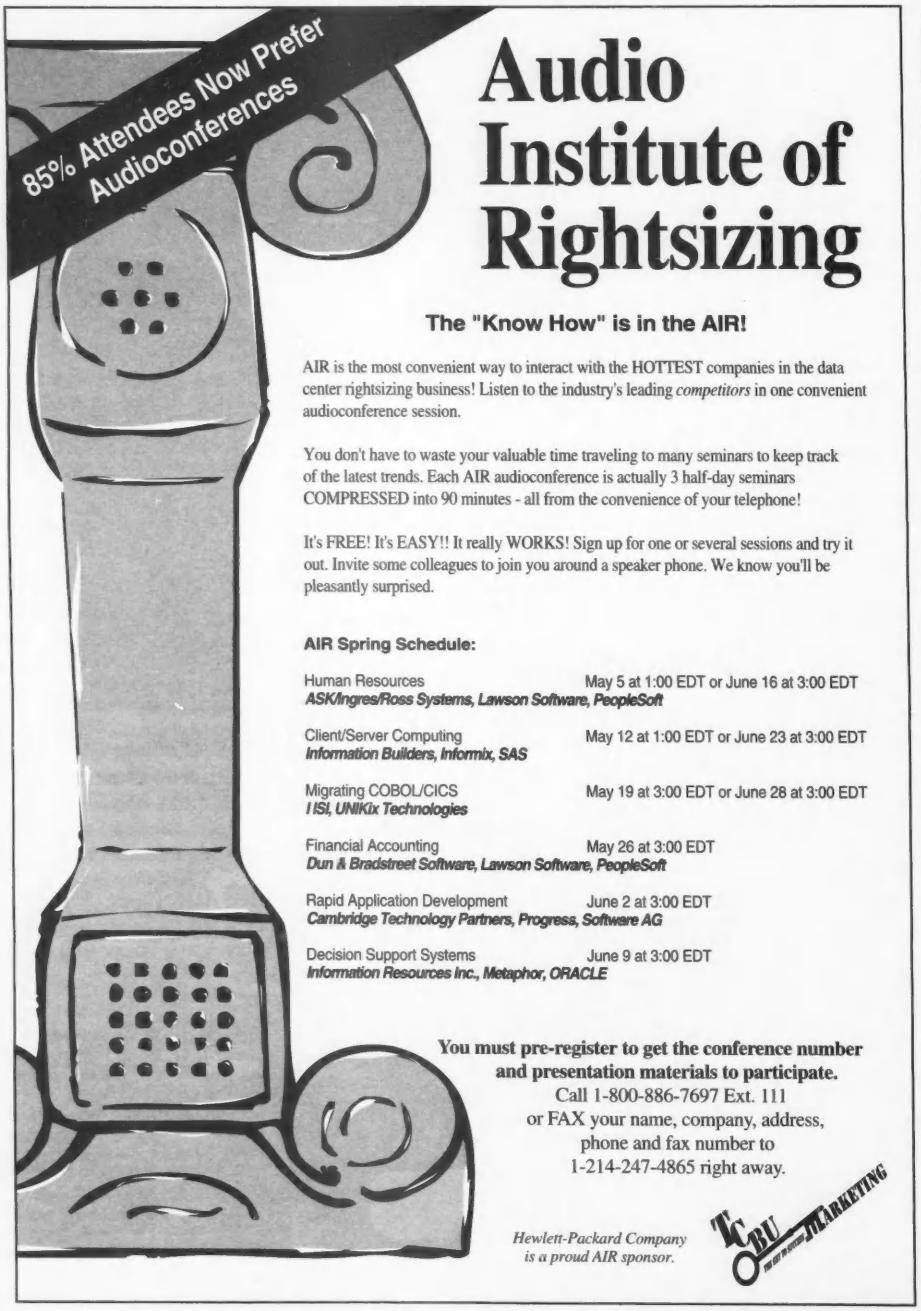
The company also sells an OS/2-based report writer front end to Focus but said there is little demand for it.

"The risk was that users would start picking up PC tools and not use Focus," said Judith Hurwitz, president of Hurwitz Consulting, Inc. in Watertown, Mass. "So this is to keep the installed base from saying, 'Let's look at the PC tools.'"

One Focus Reporter beta user has worked with other desktop development tools but said the Information Builders tool was the better choice for an end-user data query application he was developing called Goal Manager.

"It's more powerful than some of the other front ends," said beta-test user Steve Lasher, senior systems analyst at the Atlanta Region Information Services department at the Federal National Mortgage Association, which also uses Gupta Corp. tools and Microsoft's Access. "Behind it is a full language, so you don't have to write macros or use a third-party product with it like [Microsoft's] Visual Basic," Lasher said. "Everything is done in Focus."

Focus Reporter for Windows is shipping now at a list price of $395.



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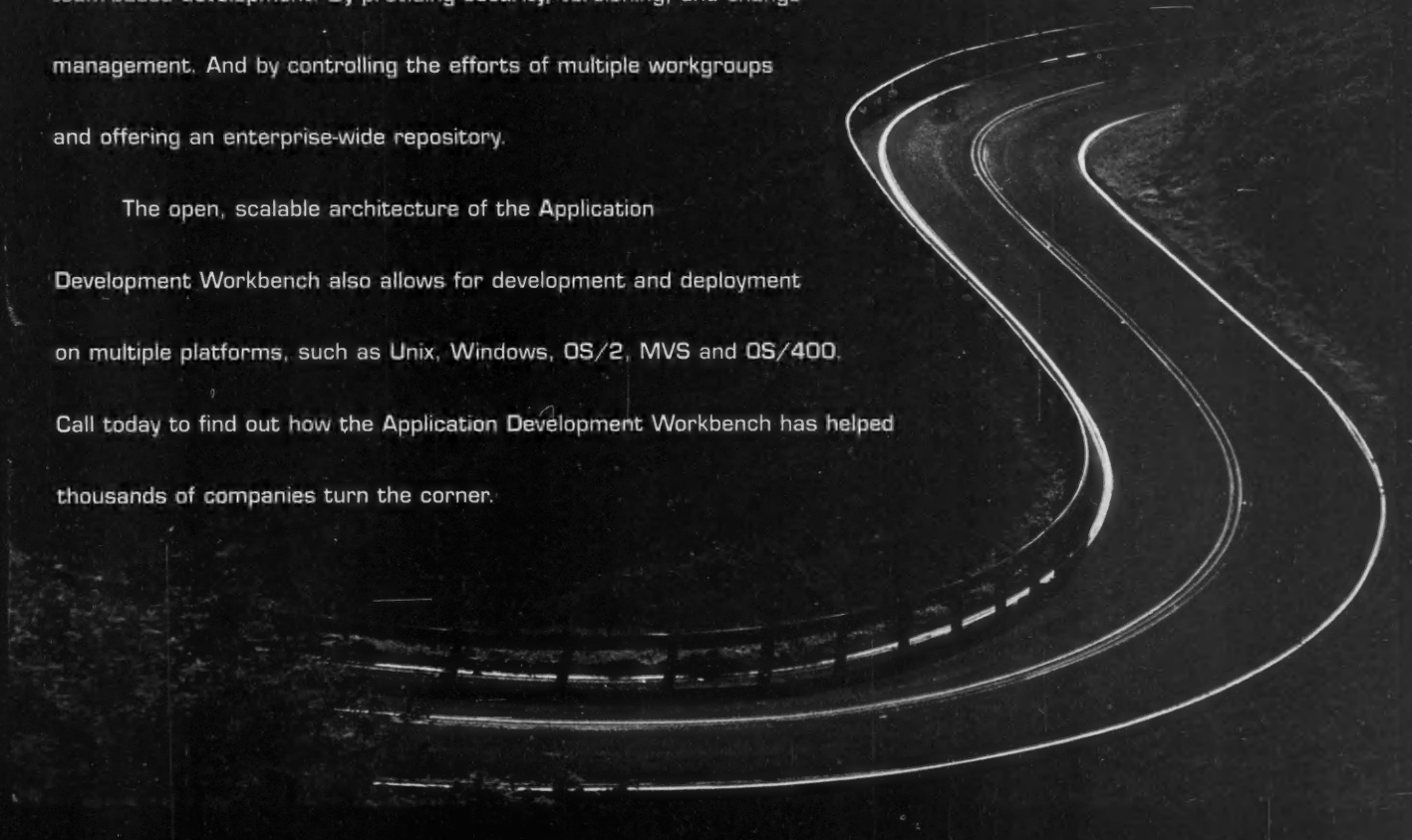


Licensing

CONTINUED FROM PAGE 1

petent programmers. Opponents call it regulatory overkill and deem it inappropriate for a fast-paced field in which software is written by teams.

"Occupational licensure is a sham," said John Aynesworth, a computer professional in West Bend, Wis., and an attendee at the recent Computers, Freedom and Privacy conference in Chicago.

"The only purpose of occupational licensure is to restrict the labor supply so that those people who hold the license can charge monopoly prices enforced by the state, period," Aynesworth said. "Any appeals to the public safety or public interest are a smoke screen."

No accepted standard

Many information systems managers are also critical of licensing. "It's impossible for the government to create a licensing test dynamic enough to keep up with technology," said John Shiels, vice president of IS at JM Huber Corp., a manufacturer in Edison, N.Y.

Given the debates over structured development methodologies and rapid prototyping, there is no commonly accepted standard for software engineering, he added.

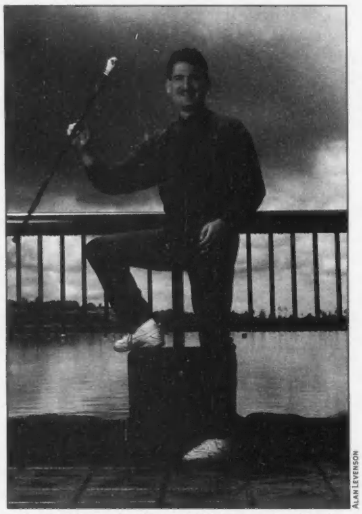
Another tricky issue is defining programmers. Do they include end users creating spreadsheet macros? Does just the programming team leader need to be licensed? How do you license overseas programmers working on critical software for use in the U.S.?

Many proponents argue that software engineering is fundamentally not so different from civil engineering, in which bridge builders must be licensed.

"I expect some form of mandatory competency validation is inevitable, at least for safety-critical software, because society will want some control over the profession," said Robert J. Melford, chairman of the public policy committee at the Washington-based IEEE Computer Society, which is studying the issue.

Safety-critical systems include those running nuclear power plants, air-traffic control centers, chemical factories and medical devices.

"So the question is, should we let the politicians do it in a crisis atmosphere, or should we do it ourselves in a way that is responsive to the needs of our profession and serves the public welfare?" asked Melford, a computer security consultant.



ALAN LEVENSON

Robert J. Melford *of the IEEE Computer Society: 'Society will want some control over the profession... [but] should we let the politicians do it... or should we it ourselves?'*

A joint task force of the IEEE Computer Society and the Association for Computing Machinery (ACM) is studying such issues as skills, education, reeducation and standards of professional practice. The target date for a report is October 1995.

Meanwhile, the ACM's Special Interest Group on Computers and Society has a task force studying certification (which is voluntary) and licensing (which is mandatory), according to Donald Gotterbarn, associate professor of computer and information sciences at East Tennessee State University in Johnson City. He said that report is due in June 1995.

Inevitable and vital

Neither association has endorsed licensing — in fact, many members of the freewheeling and largely unregulated software community are strongly opposed to it — so the low-level studies could fizzle. But Gotterbarn said he believes licensing is not only inevitable but also vital to protect consumers from programmers who produce shoddy work.

The issue was last raised in 1991 when the New Jersey State Assembly passed a bill to regulate and license "software designers" to protect the public from unscrupulous developers.

The bill was killed in the state senate after fierce opposition developed from a coalition of IS managers, vendors and independent programmers.

IS managers vigorously opposed the New Jersey bill as either a misguided effort to regulate businesses or a state bid to raise money through annual license fees, said James B. Webber, president of the Omicron consortium of IS managers in Mountain Lakes, N.J.

"AT&T, for example, has about 5,000 IS professionals in New Jersey, and they threatened to move every IS professional out of New Jersey if that bill had passed," Webber said.

He added that there is no compelling need for such legislation because there is no evidence of "a bunch of computer consultants out there ripping off the public." He said market forces and lawsuits can take care of any isolated problems.

Critics are also worried about how state-based licensing would work, given that much of today's software is written in multiple states and even overseas. "The idea of putting computer professionals through state-by-state licensing is just absurd on the surface," said Murray Turoff, a computer science professor at the New Jersey Institute of Technology in Newark.

More concerns

Other common objections include the concern that licensing individuals will not address the fact that most software is built by teams, as well as the concern that licensing tests will become outdated.

"Can you imagine the effort needed to create a fair, across-the-board test? It would be brutal. You'd be updating that test every week," Webber said.

The Institute for Certification of Computing Professionals (ICCP), which offers broad-based certification testing and opposes state licensing, altered its policy last month to acknowledge that licensing may be inevitable.

"We still don't condone licensing, but if a regulatory body insisted on licensing, we'd want them to adopt our program rather than have 50 different state programs," explained George R. Eggert, executive director of the ICCP in Des Plaines, Ill.

Over the next decade, experts said, the profession may see a hodgepodge of approaches to software quality, including state licensing, certification, regulation of specific industries and quality standards from the International Standards Organization and the Software Engineering Institute.

In addition, the marketplace is responding to the quality issue with vendor-specific certification such as Novell, Inc.'s Certified NetWare Engineer designation.

The fledgling National Association of Communication Systems Engineers in Denver is scheduled to begin certification testing in mid-July.

A model test

Critics claim that programmer licensing will only stifle innovation and reward good test-takers. But Donald Gotterbarn, chairman of one task force studying the issue, said his model for licensing computer professionals addresses many common objections. Gotterbarn, an associate professor at East Tennessee State University, said the model is drawn from licensing schemes used for paramedics and engineers. It includes the following elements:

- **The mandatory** licensing standard would be national in scope, created by computing professionals and administered by state governments.
- **A four-year college** degree would be required to assure that practitioners will have come in contact with current best practices.
- **Practitioners would** have to apply their knowledge by working as an apprentice to a licensed computer professional for at least three years.
- **The license would expire** every five years, thus requiring a commitment to reeducation to keep practitioners up on changing technology.
- **Different levels of licensing** would reflect skills and areas of competence. The highest level would be for safety-critical software.
- **Sanctions would be** imposed on those who violated the standard of best practices and/or the code of ethics. This would be a counterweight to the schedule and budget pressures that can lead to shoddy products.

Can You Pass the TEST ?

1. What management concept is concerned with only performance deviations outside allowable control limits?

A. Quality circles
B. Scientific management
C. Management by exception
D. Management by objective

2. Which of the following is not a program control to assure data accuracy?

A. Cross-footing
B. Echo-checking
C. Control total
D. Limit and reasonableness test

3. Which of the following correlation coefficients most likely reflects an error in computation?

A. -0.60
B. 0.00
C. +0.60
D. +1.20

4. Which of the following graphic aids would be least useful in monitoring a project?

A. A pie chart
B. A Program Evaluation and Review Technique chart
C. A milestone chart
D. A critical path chart

5. The topology of a network can be each of the following except:

A. Star
B. Packet
C. Bus
D. Ring

Answers: 1.C 2.B 3.D 4.A 5.B

Source: Sample questions from the Institute for Certification of Computing Professionals, Des Plaines, Ill.

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		1992	**1993**
		PeopleSoft Financials 1 ships	PeopleSoft Financials 2 ships

It's a track record that's hard to beat – especially when you consider that most application vendors are still new to client/server. They're still making promises, announcing plans or experimenting with client/server technology. They're simply not prepared to support you in a client/server production environment.

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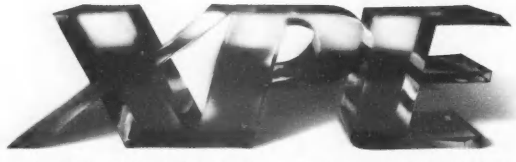

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Briefs

No more poison pills

Shareholders at its annual meeting last week forced **Advanced Micro Devices, Inc.** to drop its poison-pill defense against takeover attempts. AMD adopted the policy in 1990 when its stock was at a particular ebb.

Aldus boosts image

Seeking to expand its product line with a catalog software developer, Seattle-based **Aldus Corp.** has acquired **Image Club Graphics, Inc.**, a privately held firm in Calgary, Alberta. Aldus gets all Image Club shares, its products line, mail-order catalog business, source code and trademarks for a onetime cash payment of $3.4 million.

Kurzweil sees loss

Kurzweil Applied Intelligence, Inc. said it will announce in June results for the fiscal year ended Jan. 31. The firm said a review of its revenue recognition policies and practices may result in a substantial loss.

SHORT TAKES **Kendall Square Research Corp.** is asking **NASDAQ** to reconsider a decision to delist its stock. . . . **Microsoft Corp.**'s former president, Jon Shirley, 55, was elected chairman at **Mentor Graphics, Inc.** . . . **Autodesk, Inc.** founder John Walker resigned last week to focus on other ventures. . . . **Media Magic, Inc.** in Palo Alto, Calif., appointed former Novell, Inc. executive Gerald Machi chief executive officer. . . . Cheryl L. Handler, cofounder of **Thinking Machines Corp.** in Cambridge, Mass., resigned as chairman. . . . Former **Apple Computer, Inc.** executive William V. Campbell, 53, has joined Menlo Park, Calif.-based **Intuit** as president and CEO. . . . **Standard & Poor's Corp.** said it may downgrade certain **Apple** debt due to increased uncertainty that Apple will achieve profitability levels reflecting its current rating.

PC players up share power

Lotus seeks giant increase in allotment; Microsoft plans 2-for-1 stock split

By William Brandel

■ Against a backdrop of 1980s-like mergers and consolidations in the PC software industry, Lotus Development Corp. and Microsoft Corp. are looking to increase the number of shares each puts into circulation.

An increased share allotment is significant because it could signal that a software company is gearing up for an acquisition. Because software companies do not carry as high a physical asset value as other companies, software firms tend to perform significant transactions with stock shares rather than cash.

A Lotus source said the company has not yet decided what exactly it would do with the shares, but it is considering an acquisition or a stock split.

However, the likelihood of Lotus pulling off a major acquisition anytime soon has fallen with the price of its stock — from a 52-week high of 86½ to below 60 last week. Lotus' price/earnings ratio tumbled from 36 for fiscal 1993 to under 28 in some stock analysts' 1994 projections. Normally, companies with large price/earnings ratios tend to buy companies with smaller ratios.

Wall Street analysts who were calculating a Lotus acquisition into their projections just one week ago are now beginning to doubt whether Lotus could buy a major concern such as Novell, Inc. or Borland International, Inc.

"I don't think you're going to see Lotus do any major acquisitions over the short term," said Timothy McCollum, an analyst at Dean Witter Reynolds, a Wall Street investment research company located in New York.

McCollum noted that at Lotus' current stock price, its market capitalization is at $3 billion, while Novell's stands at $10 billion. "That pretty much sums up the situation right there," he said.

Awaiting the green light

Lotus' board is seeking shareholder approval to put 205 million shares of stock on the market.

Currently, Lotus has approximately 45.5 million common shares outstanding, and its board wants to put up to 200 million shares of common stock and 5 million new preferred shares on the market.

Lotus shareholders will vote on the issue at the annual meeting on May 25.

Microsoft has announced that it will perform a 2-for-1 stock split, slated for May 6. With nearly 285 million shares outstanding, Microsoft is moving to place 570 million shares into circulation.

The company said it is doing so to make its stock more attractive to smaller investors. A stock split does not give the company any extra leverage to perform a stock-based acquisition.

Periscope down

Lotus' and Microsoft's price/earnings ratios ain't what they used to be

	1993	1994*	1995*
Lotus	34	27	23
Microsoft	28	23	19
Borland	NM	NM	74

*Estimated NM: Not meaningful

Source: Salomon Brothers, Inc., New York

1994 first-quarter earnings

Company	Revenue January through March	Percent change from 1993	Net income January through March	Percent change from 1993
Advanced Logic Research, Inc.	$48M	10%	$0.3M	123%
Amdahl Corp.	$379M	-0.5%	$7.1M	102%
AST Research, Inc.	$591.3M	60%	$13.2	20%
Cheyenne Software, Inc.	$27M	92%	$10.3M	82%
Boole & Babbage, Inc.	$32M	14%	$2.8M	40%
FileNet Corp	$38.8M	12%	$2.4M	11%
Gupta Corp.	$17.2M	56%	$0.5M	-23%
IBM Credit Corp.	$2.1B	24%	$59M	1%
Informix Corp.	$96M	25%	$12.5M	9%
KnowledgeWare, Inc.	$39M	51%	$0.8M	103%
Legent Corp.	$118M	15%	$8.7M	-52%
Parallan Computer, Inc.	$3.5M	-46%	$0.31M	-89%
PeopleSoft, Inc.	$20M	100%	$2M	83%
Powersoft Corp.	$25M	160%	$2.9M	165%
Ross Systems, Inc.	$17M	-21%	-$6M	NM
Silicon Graphics, Inc.	$376M	39%	$35M	73%
Stac Electronics	$9.7M	-13%	-$0.94M	NM
Storage Technology Corp.	$336M	-0.88%	-$20M	NM
Stratus Computer, Inc.	$135M	18%	$11.4M	29%
Symantec Corp.	$69.9M	9%	$7.2M	198%
Tandem Computers, Inc.	$484M	-5.5%	$26M	132%
Unisys Corp.	$1.7B	-11%	$60M*	-77%
Wang Laboratories, Inc.	$205M	-30%	$3.1M	104%

*After a $7.7M charge for costs associated with the repurchase of debt NM = Not meaningful

It's been a rough-and-tumble, mixed-up quarter for technology stocks, with a decided accent on the unexpected. A number of firms posting profits, among them **Lotus Development Corp.** and **Netframe Corp.**, saw their stocks take some strong hits. While **IBM** put a glow back in some investors' cheeks by recording a much-better-than-expected first-quarter profit of $392 million, **Digital Equipment Corp.** blew the wind out of its own sails with a stunning $183 million loss.

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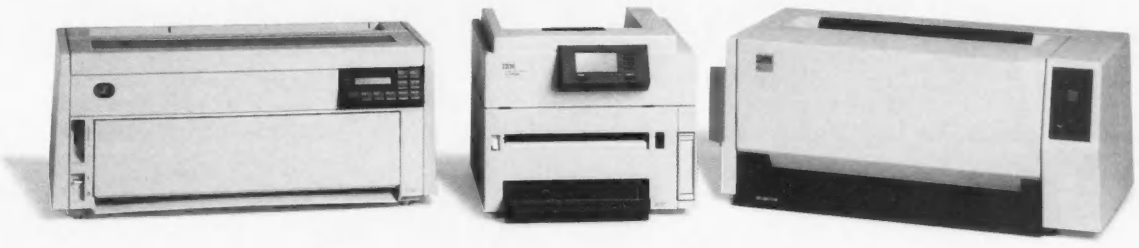

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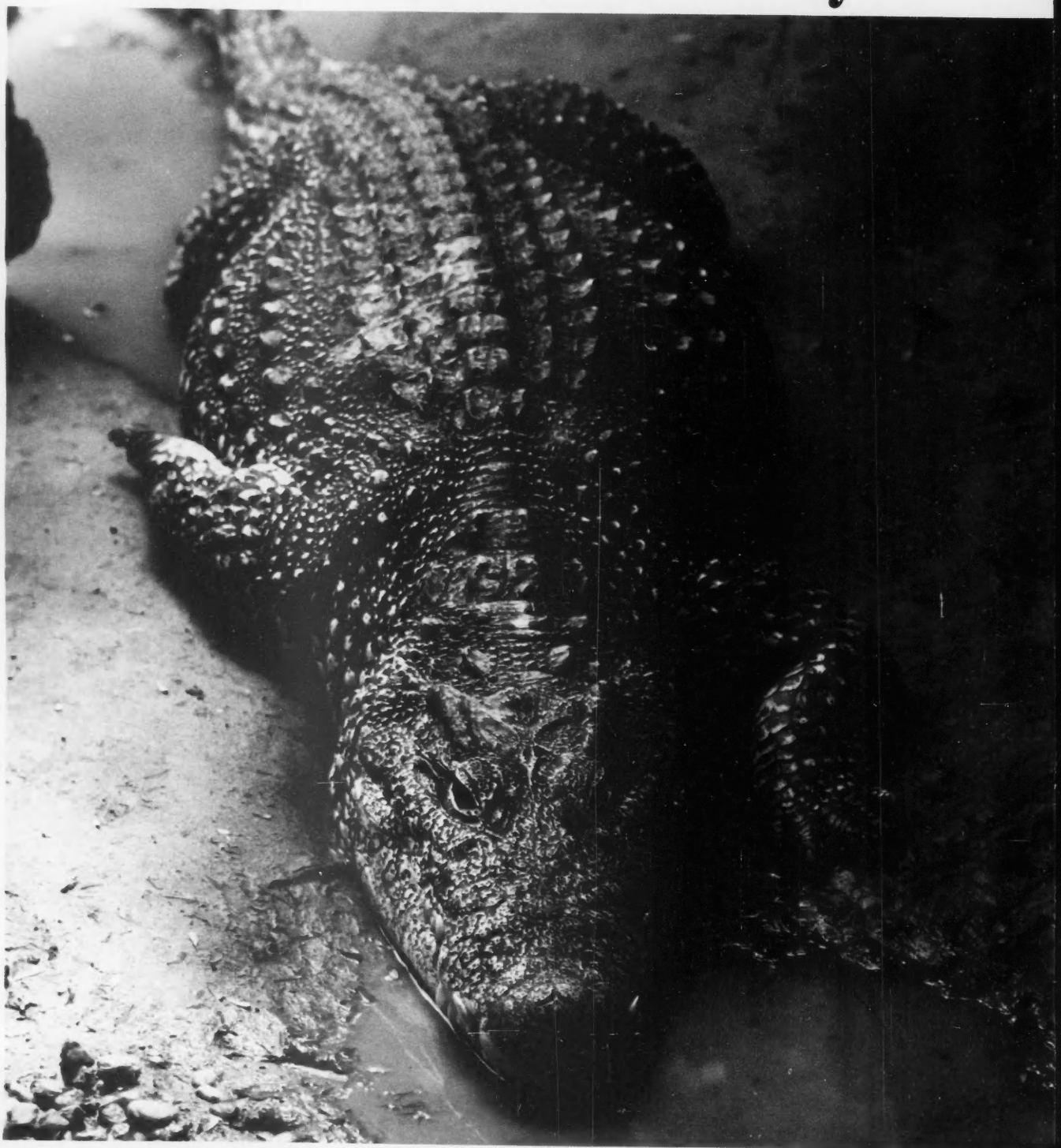

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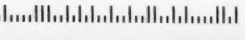

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Editorial

No guts

Microsoft's eleventh-hour withdrawal of a controversial provision in its Chicago nondisclosure agreement late last month speaks volumes about why the company is so feared and hated by its peers in the industry. It also says plenty about its competitors' lack of resolve to do anything about it.

As we reported last week, Microsoft inserted language in Chicago nondisclosure forms sent to several large software firms prohibiting those companies from working on competing products. The agreement specifically cited the OpenDoc object technology standard, the Windows emulation software called Wabi and Novell's UnixWare (but strangely, not OS/2). In order to see Chicago, the document said, a developer couldn't work on any of those products for three years.

You have to marvel at Microsoft's sheer audacity in trying to foist such a blatantly anticompetitive restriction on independent software developers at a time when the company is under a Justice Department microscope for allegedly monopolistic behavior.

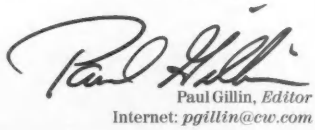
But you also have to cringe at the sheep-like behavior of independent software vendors, most of whom apparently went along quietly with this outrageous requirement. They reportedly included Lotus and Borland, who supposedly still wield some clout in this industry, and several other software firms our reporters contacted. In fact, if WordPerfect hadn't raised a fuss and reporters hadn't started asking Microsoft about the legal implications of all this, you wonder if Microsoft wouldn't have gotten away scot-free with this one.

Come on, software companies. Is it really all over? Is there really no hope that any desktop operating system technology can amount to anything unless it bears a Microsoft logo?

Rewind to 1987 and IBM's announcement of the PS/2s with the Micro Channel Architecture. Seeking to regain control of the desktop standard, IBM announced that it had filed for dozens of patents on Micro Channel and dared anyone to try to clone it.

Competitors kicked Micro Channel's tires, took a look under the hood and said, "No, thanks." They wouldn't bother. Over the next two years, a panicked IBM first dropped its threats and then began begging competitors to clone Micro Channel. But it was too late. The standard, and IBM, were the laughingstocks of the industry.

OK, Windows isn't the same thing. But the principle isn't all that different. Wouldn't it have been neat if the biggest independent software vendors took a look at the Chicago NDA and just said no, we won't bother with Chicago? Nah. There's too much money to be made in the Windows business to let principles get in the way.



Paul Gillin, *Editor*
Internet: *pgillin@cw.com*

Letters to the editor

In the eye of the beholder

Isn't it funny how Novell, one of the chief complainants against Microsoft's "predatory trade practices," is looking more and more like the Redmond giant?

If it purchases WordPerfect and Quattro Pro, Novell will have major applications and operating systems in its kingdom; I wonder if it also has Chinese-wall builders on staff. And what about how Novell redesigned NetWare so it will only run on servers that are running DR DOS? Sounds predatory to me.

David Michael Bernard
New York

Credit is due

I appreciated "Credit industry employs E-mail to address dispute resolution woes" [CW, April 4]; I do wish to make a couple of clarifications, however.

The success of this new process cannot be completely credited to GE Information Services (GEIS). Although GEIS provided the central network, I/O Express, Inc., an Anaheim, Calif.-based firm, is the leading software provider for the PC software interface. GEIS also provides a PC interface that competes with that of I/O Express, but all companies quoted in the article are using the Automated Data Verification System, the software provided by I/O Express.

L. Curtis O'Reilly
Anaheim, Calif.

E-mail vendors are staying the course

"Small players retreat from E-mail onslaught" [CW, April 4] did a good job covering the trend toward commoditization in the E-mail market but failed to mention that some of the smaller players in the overall E-mail market will continue to develop and own large pockets of the marketplace.

CE Software has no intention of abandoning its 1.1 million users or its leading position in the Macintosh market. QuickMail will continue to evolve and improve. (Meanwhile, Lotus and Microsoft are essentially giving up on Macintosh users. Microsoft even went so far as to scrap its Macintosh mail server.)

CE Software is realistic about its chances of taking on Microsoft and Lotus head-on on the PC side, but we will continue to be tenacious in our own markets.

Ford Goodman
President and CEO
CE Software, Inc.
West Des Moines, Iowa

While we appreciate the coverage of our company in "Small players retreat from E-mail onslaught," we were very upset with the implication that Da Vinci will stop selling its Email product.

You quote me accurately as saying, "When you're dancing with elephants, the best thing to do is get off the dance floor or sell them dancing shoes." Unfortunately, the story goes on to comment that this strategy may cause some users to switch their E-mail systems. To make matters worse, you follow with a quote from a Da Vinci Email user saying how he would hate to change from Da Vinci but may have to if the product is not developed and upgraded.

This alarmed and misled several Da Vinci customers into thinking that we plan to discontinue or no longer develop Da Vinci Email. This is patently untrue.

Da Vinci's long-term strategy has always been to add a suite of mail-enabled groupware products to our product line. It would be corporate suicide to continue to compete head-on with any of the huge E-mail elephants. Instead, our long-term goal has always been to deliver mail-enabled products that take advantage of the leading messaging products.

I would appreciate the opportunity to assure *Computerworld* readers that Da Vinci will continue to build the best E-mail product for NetWare and will continue to fully support the product going forward.

Bill Nussey
President and CEO
Da Vinci Systems Corp.
Raleigh, N.C.

■ Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail: 279-6273; Internet: letters@cw.com. Please include a phone number for verification.

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The network rules

Eric Harslem

The past decade has seen dazzling growth in technology. More computing power sits on the average desk than was available in the computer room of most universities a mere 20 years ago. Faster servers, larger drives and more networking performance continue to be offered to MIS professionals.

It is time that we as an industry pause to assess our accomplishments with the understanding that we succeed or fail based on one question: Are we really making the information manager's job any easier?

A boost in performance doesn't actually reduce the repetitive tasks that are involved in keeping the network running.

A recent survey by market research firm International Data Corp. revealed that nearly 50% of the cost of keeping networks up and running arises not from hardware but software and ongoing support and services. The reality is that LANs may be getting less expensive, but they're not getting any less complicated; quite the contrary. Rapid technology change and network complexity place MIS managers in the unfortunate position of being managers of technology rather than managers of information.

Although vendors benefit from rapid technology changes, their customers often do not. Much of the difficulty in ensuring that networks deliver on their promise lies with vendors. Rapid technological change only complicates the network manager's job and too often does little for his or her organization. The network manager often must use valuable time and resources to validate the new technology before implementation, only to discover that the technology has changed again.

In addition, if LAN administrators spend 70% of their time babysitting the network, then a boost in performance doesn't actually reduce the repetitive tasks that keep the network running.

Nor does it prevent systems errors from periodically locking up or crashing a large network such as one at a major hospital or banking institution. These are real-world problems that MIS professionals face on a minute-to-minute basis.

It is time the industry set a few ground rules for the future of network computing, including the following:

- The hardware vendor's job is incomplete if it fails to account for the network as an evolving entity.
- While most vendors approach the problem of "uptime" strictly from a technology standpoint, holding themselves accountable only for the reliability or the hardware simply isn't enough.
- Where installation and ongoing support are concerned, it is mandatory that responsible vendors stop passing the buck and start providing the services MIS managers are demanding.

As an industry, we can't afford to act like a 600-pound gorilla and bully users into submission. Nor can we continue the finger-pointing among hardware, software and networking vendors. Our objective should be singular: To provide users with a simplified, hassle-free networking experience.

It's time we turned the tables and let the network serve the customer.

Harslem is senior vice president at the Dell Computer Corp. product group.

Software deconstruction

Esther Dyson

Consolidation is all the rage in the software business right now. Many once-independent companies are merging with others in mostly vain efforts to compete more effectively. When tying up with one giant, a company automatically becomes an enemy to the others and has less chance to see its technology proliferate. Instead of combining with a single large company, you can spread your genetic material around through many companies if you package it as technology modules rather than as a whole product.

Take the case of Verity Corp., founded in 1988 as a spin-off of Advanced Decision Systems, a military supplier. Its major customers/benefactors were the government security agencies that quickly recognized the value of its high-level text tools.

Basically, Verity technology went a step further than traditional search-and-retrieval systems and managed not only the retrieval of text by topic but also the construction of a mostly hierarchical structure of concepts. For example, the topic "France" contains references to Paris, Charles de Gaulle, croissants, Lyons, Bernard Attali and perhaps Jerry Lewis. That enables effective searching for topics that might not be explicitly mentioned but rather assumed as context.

Moreover, the "table" in the furniture category is recognized as being different from the "table" in the models category, and so on. Underlying all this is a powerful text-search engine that indexes text and maintains information about the number, location and proximity of pairs of the words within each document.

For a long time, Verity maintained a powerful position with the leading mainframe-style approach in text tools. Its technology was expensive, required expert users and provided huge benefits. Last year, the company was almost acquired by Frame Technology, which ran into problems of its own. As a result, Verity's top executives, Mike Pliner and Cliff Reid, departed, and the board hired Philippe Courtot, former CEO at CC:Mail, to run the company as an independent entity.

Packaging technology in modules allows a company to spread its genetic material through many companies.

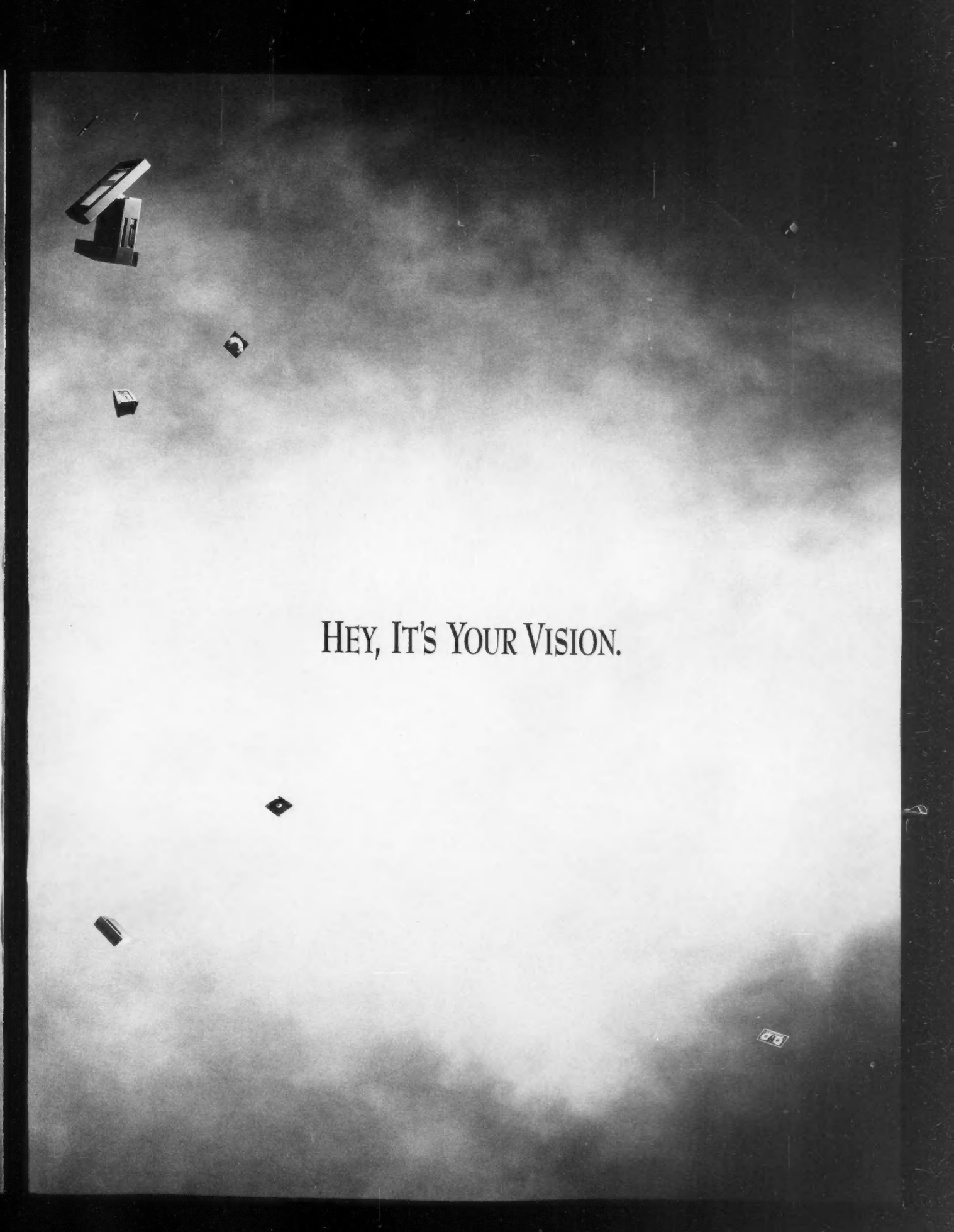
CC:Mail, of course, was the first industrial-strength E-mail company to understand the implications of client/server computing. It divided its line into a server product and a client package that could run with any E-mail back end. But then it was acquired by Lotus, and it no longer was as hospitable to all — CC:Mail's server of choice is the Notes back end. Now, Courtot is applying the same pre-Lotus CC:Mail approach to Verity.

The new form of Verity's tools is a tool kit for building modules called Information Agents, which can be incorporated into other vendors' applications or operating systems or installed by a corporate user as a general server capability for a variety of clients. This allows Verity to remain a friend to all vendors as long as its technology is better (or at least available sooner) and cheaper than what they could build.

By turning its large-scale, monolithic application into a set of modules, it can continue to maintain its identity as a company, allowing its technology to live in productive symbiosis with companies that would otherwise behave as predators.

The moral of this story is that while you might have to pay for Verity's technology, smart vendors can copy its approach for free. It's the right approach for the future in which only a few giants will survive — and a few other companies will benefit by filling in the cracks, not with applications but with properly packaged technology modules.

Dyson is president of Edventure Holdings, Inc. in New York. She welcomes readers' thoughts and can be reached on the Internet at edyson@eff.org.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Trackball alternative shows promise

New kind of mouse for portables has no moving parts, requires no cleaning

By Michael Fitzgerald

■ Users who run into trouble with dirty mice, particularly on portables with their smaller trackballs, will soon have an alternative that is as simple as letting your fingers do the pointing.

Cirque Corp. is scheduled today to release its GlidePoint finger mouse, a 3- by 3-in. touch-screen device that replaces the standard mouse. The 2-in. wide, touch-sensitive screen lets the user glide a finger across the screen to move the cursor. To "click" on the screen, a user simply taps it lightly. To double click, the user taps twice. A tap and a hold lets users drag icons or other on-screen objects. GlidePoint also has conventional mouse buttons at its base.

The user glides a finger across the touch-sensitive screen to move the cursor, taps once to click and taps and holds to drag an icon.

"There are no moving parts, so it doesn't get all dirty or gunked up," said James O'Callaghan, Cirque's vice president of marketing and administration, in reference to a problem that occurs both in regular mice and portables that use trackballs.

Vendors acknowledge the problem with mice and trackballs and have always instructed users to clean them regularly.

Important or not?

A spokesman at Toshiba America Information Systems, Inc. termed the problem a minor one. He said Microsoft Corp. is developing a new mouse, due out in late June, that promises greater ease of use.

Trackball dirt "is not something that's a make-or-break issue, but they do become unresponsive after a while, in my experience," said Victor Mutnick, corporate vice president of information systems at New York Life Insurance Co.

Mutnick said he was lukewarm to something like GlidePoint. "Just hooking up a mouse or having to plug something in the port, that's always a bugaboo" with users, Mutnick said.

At the same time, he said his users often complain about trackballs and find them less responsive than mice. "If it's better than a trackball, it could be good for us," Mutnick said.

Some users were more interested in GlidePoint's approach.

Michael J. Henderson, PC coordinator at James River Corp.'s Neenah Technical Center in Neenah, Wis., also said that in his experience, built-in trackballs frequently lose their responsiveness.

"New technology does need to be developed, and this technology sounds like it could be heading in the right direction," Henderson said.

GlidePoint can be positioned wherever the user finds it most comfortable and will fit on a plane tray table next to a notebook. It is Microsoft mouse-compatible and connects through the mouse port. It works with IBM-compatible PCs but not Apple Computer, Inc. Macintoshes.

Analysts generally were pleased by the notion of a finger mouse, some because they personally do not like to use trackballs.

No more mice

Others said they like GlidePoint enough to swear off the trackball's more efficient cousin, the mouse.

"I will never use a mouse again," said Tim Bajarin, president of Creative Strategies Research International, Inc. in San Jose, Calif.

Andrew M. Seybold, editor in chief of the "Outlook" newsletters on computing, dissented, saying users might not be good enough with their fingers to use the device. They also might not like its cables.

GlidePoint will retail for $99 and will be distributed initially only through Ingram Micro, Inc., although Salt Lake City start-up Cirque is talking directly with retail chains, according to O'Callaghan.

Commentary

Jeffrey Henning

Proprietary software beat goes on

Microsoft's OLE 2.0 was supposed to enable component software to work with any OLE-compliant application. Yet the first major component applet is Shapeware's Visio Express for Microsoft Office. That's right, for Microsoft Office. Wait a minute, you say. Isn't the whole point of OLE 2.0 that you will be able to drop applets into any application? What gives here?

What gives is shrewd marketing by Shapeware. Office is one of the best-selling software packages. As a result, resellers love Office and are delighted to have an aftermarket product they can sell to Office purchasers. For resellers, Visio Express is the software equivalent of "would you like fries with that?" In other words, it's a great way for resellers to make a little extra margin.

To back up for a minute, Visio Express is the applet version of Visio 2.0, Shapeware's drag-and-drop drawing program that enables even nonartists to prepare diagrams and charts. Visio Express provides only the basic functionality of Visio; it does not run as a stand-alone application, and all file management has to be handled by the host application (the container, in OLE parlance).

Of course, Visio Express has a street price of less than $50, compared with about $120 for Visio 2.0. Now, Visio Express for Microsoft Office will in fact run with any OLE-compliant application; it just runs better with Office applications (Excel, Word and PowerPoint).

Look and feel

Shapeware has optimized Visio Express by customizing its interface to closely follow the Office look and feel, integrating similar menu structures and similar icons as those found in the suite. Visio Express is accessed by clicking an icon in Word, Excel or PowerPoint; the interface is so similar that a user wouldn't even notice the application had changed if it weren't for the Shapeware splash screen. Behind the scenes, Visio Express has been extensively tested with the Office applications, while it might interoperate less seamlessly with other container applications.

Vendors such as Shapeware have hidden the complexity of OLE 2.0 from users, but the 400 API calls that they must access to implement OLE functionality leave plenty of room for incompatibilities in different applications' implementations.

For the near term, expect OLE compatibility

Henning, *page 44*

PC standards development

Central administration may become PC reality

By Elisabeth Horwitt

A 2-year-old desktop management standardization effort that is expected to bear fruit later this year would potentially allow LAN administrators to manage PC configurations and problems centrally, rather than in person.

The Desktop Management Task Force (DMTF) vendor consortium plans to release a developer's kit for its Desktop Management Interface (DMI) in July. The kit will be quickly followed by commercial implementations from key PC hardware and software vendors.

Easy data access

DMI promises LAN administrators the ability to easily extract "internal systems management data from a variety of manufacturers," such as the version number of the operating system or software package, or CPU or disk utilization levels, and load it into a network management platform, said Jill Huntington-Lee, a principal at Brandywine Network Associates, a Cinnaminson, N.J., consultancy.

The information could then be used in applications ranging from inventory management to troubleshooting to user administration.

At The Solomon R. Guggenheim Museum, for example, "One of the Holy Grails of DMI is being able to do away with physical inventorying," said Richard Roller, director of information systems at the New York museum. Existing packages tend to monitor only certain brands and types of PC elements.

Microsoft Corp., Novell, Inc., Hewlett-Packard Co., IBM, Intel Corp., Compaq Computer Corp. and AST Research, Inc. have committed to providing software that

PC standards, *page 42*

Tool lets managers 'play out' scenarios

Systems thinking used to model environment, follow long-term effects

By Garry Ray

To most managers, it is obvious that the world does not function in isolation.

Change the speed of the production line, and you change inventory. Change inventory, and you change expectations on the sales force. If the sales force changes, so might customer relations.

PRODUCT test DRIVE

So, even though it is clear that actions have consequences, it is less clear how these interacting effects might be predicted, simulated and adjusted.

An evolving category of software tools promises to solve these kinds of problems. One such tool is the $695 Ithink from High Performance Systems, Inc. in Hanover, N.H.

Offered under the rubric of "management flight simulators," "modeling tools" and other names, tools such as Ithink generally use the techniques and approaches of "systems thinking."

Popularized by management gurus such as Peter Senge of MIT, the approach assumes that changes in one part of a system — whether a management system or a social system — will have intended and unintended consequences upon other parts of the system. Most important is that these effects will take place over time. That is, an action may seem desirable in the short term but produce a cascading series of problems that become obvious only over a long period of time.

The goal of systems thinking — and thus of Ithink — is to allow users to plan for and anticipate these effects.

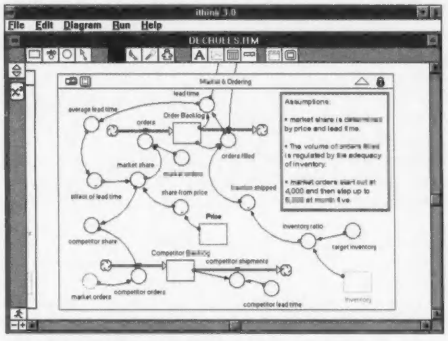
Set up a model

Ithink allows users to build and simulate a system of almost any possible type — management, manufacturing or social — with a small number of graphical and quantitative tools.

Most important are the three essential building blocks: stocks, flows and converters.

Stocks are places where results, actions and the like, are collected. They can be used to represent sales, inventory or anything that can be quantified. (In fact, a stock can be used to represent an abstraction such as "optimism.") Flows are used to fill and drain stocks. Converters generally contain the numeric variables or functions that convert an input from a flow, stock or another converter to an output.

To use these tools in Ithink's visual modeling environment, a manager would typically place a combination of stocks, flows and converters on the software's model construction layer. A first attempt at modeling is likely to produce some conceptual mistakes, but these can be quickly and easily fixed with Ithink's editing tools.



Ithink from High Performance Systems *enables managers to view intended and unintended consequences of a business plan under consideration*

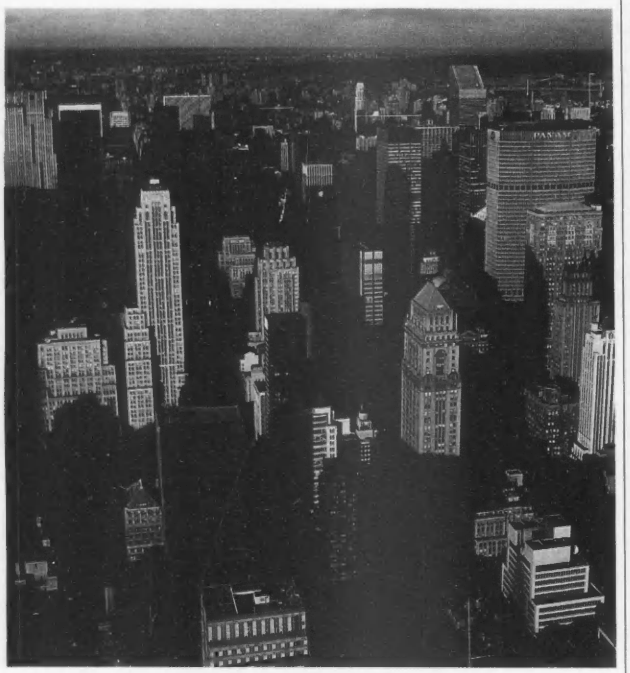
Go with the flow

Having created a schematic model of workflow in a manager's department, for example, the next step might be to add a few charts and tables to track the time and money spent on some day-to-day activity, such as sales calls. Other variables might include the number of salespeople soliciting new projects and the revenue derived from existing contracts.

Once this model has been refined and enhanced, Ithink allows it to be run, and the results of various scenarios are placed in charts, tables or both. An array of controls makes it possible to construct scenarios within a varying range of inputs (for example, to show contract revenue from two to 10 salespeople on staff). By altering the model, managers can get a good sense of what might happen in the real world.

Ithink does present a bit of a learning curve because it requires users to adopt the lingua franca of systems thinking advocates. In addition, the unconventional metaphor of Ithink modeling, and the reliance on moderate quantitative skills, may present some difficulty. However, a library of helpful documentation — including the Introduction to Systems Thinking — does alleviate some of these concerns.

In the end, it is the ability to quickly model a business scenario and run a simulation with many different variables that makes Ithink a valuable and unique addition to any manager's arsenal.



LOOKING FOR A BETTER WAY
TO TRACK YOUR CUSTOMER DATABASE?
165 NEW YORKERS CAN HELP.

PC standards

CONTINUED FROM PAGE 41

will let their systems be managed by DMI-compliant systems.

Microsoft, for example, will provide DMI management for the Chicago version of Windows and Windows NT. The company will also provide patches to add DMI support to legacy Windows systems via on-line bulletin boards. Microsoft's Hermes software distribution and configuration application will incorporate DMI when it ships, a company spokesman said.

A conversion utility developed by DMTF will enable SNMP-based management systems to collect information from PC products that support the DMI interface. Intel plans to provide DMI compliance for its LANdesk inventory and software distribution applications by year's end.

Novell is working on a NetWare Distributed Management System inventory management application that will collect data from DMI systems, a company spokesman said.

Intel, AST and Compaq are among the hardware companies that have committed to providing DMI-based management of their desktop systems.

Unix vendors are working with X/Open Co. to provide a version of DMI to go on their systems, Huntington-Lee said. They hope to have an initial version by year's end.

Search for definitions

A group of database and software application vendors plan to start a DMTF working group to define management information files for their products.

The DMTF seems to be working hard to ensure that vendors adhere closely to the management information file specifications for collecting information about a particular type of device or system, said David Goodman, a network systems manager at the Guggenheim.

He said he hopes this will prevent the problem that surfaced with SNMP, in which vendor "extensions" precluded one vendor's management system from managing another vendor's device, he added.

Cyrix adds DX2 chip to 486 upgrade family

By Michael Fitzgerald

■ Cyrix Corp. recently released a version of its 386-to-486 Upgrade Microprocessor, designed to upgrade 33-MHz 386DX systems to the performance level of a 33/66-MHz 486DX2 class processor.

Users who have upgraded their systems with Cyrix processor upgrades in the past said they are pleased with the results.

"I figure we probably bought another two years [for] those systems" by upgrading, said Glenn Loo, manager of utility information systems for the city of Palo Alto, Calif. Loo said the upgrade move has been cost-effective, particularly since the upgrade took some 10 minutes, including chip replacement and a software upgrade.

Eric LaFortune, regional electronic office systems coordinator at a major West Coast oil company, said his shop has updated all of its upgradable PCs with this and other Cyrix microprocessors.

LaFortune said the ease of installation was a major plus because it spared the company from sending someone to a site to put in a new motherboard for a PC it was going to upgrade.

"A lot of companies don't have the expertise on hand to do that," LaFortune said. "I think it avoids administrative costs in some circumstances."

The new chip taps into the 33-MHz 386DX market, which was the best-selling 386DX chip.

Analysts said the Cyrix strategy for upgrading has proved effective.

"For companies that make a big financial commitment to a given platform, upgrades make a tremendous amount of sense," said Dean McCarron, an analyst at Mercury Research in Scottsdale, Ariz. "If it buys even another year, it defers an investment that more than offsets the upgrade cost."

The Cx486DRX2 33/66 microprocessor costs $399. With the upgrade chip's release, Cyrix cut prices on its other upgrade processors. Pricing for the 25/50-MHz unit for 25-MHz 386 systems was cut to $349, while the 20/40-MHz unit, aimed at 16-MHz and 20-MHz 386 systems, now costs $299.

Cyrix said it shipped more than 100,000 upgrade processors in its first six months.

Analysts noted that Cyrix is shipping a 33/66-MHz 486DX2 class processor as an upgrade part before it is part of the regular product line. Cyrix officials said they will ship a mainstream part in the second quarter and add a 40/80-MHz part in the third quarter.

Cyrix's Pentium-class M1 processor is targeted for later in the year.

Microprocessor prices to fall

By Jaikumar Vijayan

As Intel Corp. attempts to move the market toward Pentium, there are indications that microprocessor prices could fall rapidly during the next few months.

Users can expect to see significantly cheaper Intel I486-based systems hitting the market by September — or even before that, according to some analysts.

"Microprocessor prices are going to drop much faster than anticipated," said Tony Massimini, senior market analyst at In-Stat Research, Inc. in Scottsdale, Ariz.

"There is going to be a lot of pressure on prices with Intel trying to break the $2,000 barrier for Pentium-based desktops," he said.

> "There is going to be a lot of pressure on prices with Intel trying to break the $2,000 barrier for Pentium-based desktops."
>
> — Tony Massimini, In-Stat Research

Done deal

In fact, the recent developments in the microprocessor industry, including IBM's recently inked chip manufacturing agreement with Cyrix Corp., have led analysts to believe that 486 chip prices could fall by as much as 25% to 40% by year's end.

For instance, a 66-MHz 486DX2, now selling for just under $350, will cost little more than $210 by the fourth quarter, Massimini predicted.

The impact on system prices, though less dramatic, could be quite significant, said Randal Giusto, an analyst at BIS Strategic Decisions in Norwell, Mass. As Intel attempts to make Pentium the PC processor of choice, vendors could start cutting prices rapidly on 486-based PCs — especially if Pentium prices continue to drop.

Reaching the top

According to Massimini, this is likely to be the "year of peak revenues for the 486" before the PC market migrates to Pentium.

While the IBM/Cyrix agreement is not expected to contribute directly to any immediate price drops, the presence of a competitor with manufacturing capacity in the 486 arena could spur more rapid price cuts from Intel, according to some analysts. IBM/Cyrix Pentium clones are not expected for at least another year.

Intel shifts into OverDrive

I486-to-Pentium upgrade strategy takes shape

By Jaikumar Vijayan

Intel Corp. is using pricing to lure users of its I486 architecture into upgrade strategies based on its Pentium processor.

Intel recently rolled back prices on its 66- and 55-MHz OverDrive processors by at least 20%, even as it announced a new upgrade processor for 486SX users priced at $249. A Pentium OverDrive processor is expected by year's end.

The pricing moves occur at a time when there are predictions of general decline in microprocessor prices (see story above).

"Overall, [Intel] wants to move everything to Pentium. This is part of their strategy for users who are not quite ready to make that move yet," said Tony Massimini, senior market analyst at In-Stat Research, Inc. in Scottsdale, Ariz.

The IntelSX2 OverDrive is a clock-doubling processor that can be used to upgrade 16-, 20- and 25-MHz 486SX-based systems.

Typical applications such as WordPerfect Corp.'s WordPerfect for Windows and Microsoft Corp.'s Microsoft Works run between 52% and 60% faster with the upgrade processor, according to Intel.

The new processor targets home and small business users and is Intel's entry-level upgrade chip in its current OverDrive strategy.

Intel expects to announce the P24T, a top-of-the-line Pentium OverDrive processor for 486SX and above systems, by year's end.

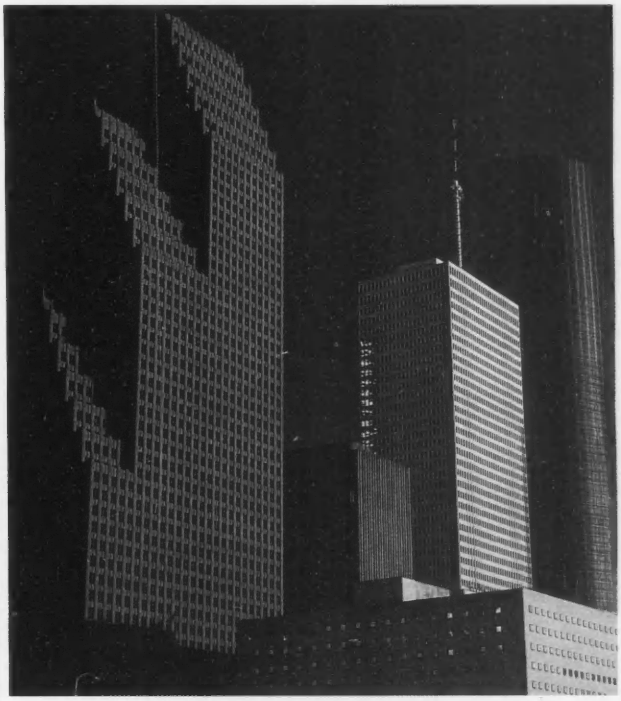
Doubting users

However, users are not entirely sure they need it yet.

"I would consider a Pentium upgrade depending on the application I needed it for and only if there was no one else [in the company] who could use a 486," said Roy Gregory, manager of personal computing at Scrivner, Inc. in Oklahoma City.

Meanwhile, there are indications that upgrade processor prices could drop further as 486 prices begin to fall.

According to Massimini, pressure from Intel's agressive Pentium pricing and competition from companies such as IBM Microelectronics, Advanced Micro Devices, Inc., Cyrix Corp. and Texas Instruments, Inc. could cause prices on some 486 chips to fall throughout the rest of the year.



92 PEOPLE IN HOUSTON CAN CUSTOMIZE MICROSOFT OFFICE FOR YOU.

Henning

CONTINUED FROM PAGE 41

to be like PCMCIA compatibility: something incomplete but gradually getting better. The bitter side of suites is that each suite has its own interface personality. Applets designed to work smoothly with Office will require different icons and naming conventions to blend in with Lotus' SmartSuite or the "NovellPerfectland Come-From-Behind Suite."

Applets such as Visio Express will eventually need to be chameleons, adopting the look and feel of the host application. That type of integration is far in the future; vendors aren't even planning for it yet. Visio Express is a revolutionary product, and it heralds the changes that component software will bring. For one, it transforms the role of suites.

By calling its applet Visio Express for Microsoft Office, Shapeware is helping transform suites into platforms. As a result, from now on, when you consider which suite to choose, you will have to factor in which has the most applets written for it. You can bet Bill's billions to bagels that Office will emerge as the platform of choice for OLE 2.0 component software.

Office is the only suite supporting OLE 2.0, giving it a head start. Office outsells the other suites combined, giving it the most attractive feature of a platform — a large installed base. Finally, Microsoft understands better than its competitors how to encourage independent software vendors to support a platform, as it has demonstrated with DOS and Windows. In fact, Microsoft recently announced it will help distribute independent software vendors' Office applets. Yes, Microsoft owns the operating system market; now it will own the suite-platform market above that.

> Microsoft understands how to encourage independent software developers to support a platform.

But with OLE 2.0 promising to make it easier to customize applications, how can we object?

Henning is launching BIS Strategic Decisions' newsletter, "User Frontiers," designed to help developers produce more usable software. He can be reached at 649-6654@MCImail.com.

173 PEOPLE IN PARIS CAN
HELP YOU AUTOMATE YOUR BILLING PROCESS.

Briefs

Holiday Inn picks Apple

Apple Computer, Inc. said **Holiday Inn Worldwide** has ported its reservation system to the Power Macintosh for front-end access at its Amsterdam reservation center supporting Europe, Africa and the Middle East. The hotel chain had been using Motorola, Inc. 68000-based Macintoshes. Holiday Inn said it eventually plans to convert to the Power Macintosh at other locations.

Sound board introduced

Media Vision has announced a three-dimensional, PC-compatible sound board that is wave table-upgradable. The board includes 16-bit stereo sound and offers interfaces for Sony, Panasonic and Mitsumi CD-ROM drives for around $380.

IBM cuts ThinkPad prices

IBM PC Co. cut prices between 9% and 13% on its ThinkPad 350 line, bringing the base price to $1,699, and the price of a color version with a 250M-byte hard drive to $2,399. Analysts indicated that the price cuts are an effort by IBM to clear inventory as it prepares to release a follow-on version of the 350.

Symantec offers upgrade

Symantec Corp. released Act 1.1 for the Hewlett-Packard Co. 100LX palmtop. Retail pricing for the product is $129.95, and current users can upgrade for $39.95.

Apple pushes multimedia

Apple released a variety of new multimedia-oriented products last week. Included in the announcement were the Apple Multimedia Kit for Macintosh, the Multimedia Kit for Windows, Apple Design Powered Speakers II and the Apple CD 300e Plus, an external CD-ROM drive. The multimedia kits cost $479 and include speakers, CD-ROM players and CD-ROM titles. The speakers cost $85, and the CD-ROM drive, which can play 3- or 5-in. disks and has a 256K-byte cache, costs $369. Products will be available starting this month, with the Multimedia kit for Windows and the speakers not available until June. The CD-ROM drive will be available in Europe and Asia this month but will not reach the U.S. until summer.

Digital adds notebooks

Digital Equipment Corp. fleshed out its notebook offerings last week by adding four **Intel Corp.** I486/33MHz-based monochrome and passive-matrix color models to its line. The notebooks, which range from $1,699 to $2,599, are manufactured by **AST Research, Inc.** A Digital spokesman said the company's own notebooks would be available before the end of the year.

Intel expands processor line

Intel is strengthening its strategy to provide current I486 users with an eventual migration path to its new Pentium architecture. The company last week expanded its OverDrive upgrade processor family by introducing a $249 CPU upgrade for users of its 486SX-based systems, even as it reduced prices by more than 25% on the 66-MHz DX2 OverDrive processor. The Pentium upgrade processor is expected by year's end.

Intel builds chip plant

Intel said it will build a $1.3 billion, 1.5 million sq. ft. microchip factory in Chandler, Ariz. Due to begin production in early 1997, the plant will produce chips on a 0.25 micron process. The plant will employ 2,000.

Sharp improves LCD

Sharp Corp. announced a new type of thin film transistor LCD that does not need backlighting. While a Sharp spokeswoman emphasized that it does not have a set plan to bring the technology to market, the advantages would be a thinner, lighter screen that draws less power and has a wider viewing angle.

PCs aid voter ID

In the months leading up to its first all-race parliamentary elections, the **Independent Electoral Commission** in South Africa used computers from **AST Research** to produce temporary voter registration cards. Three hundred Premmia-based configurations from AST were used by the commission to process identification documents for an estimated 2 million voters without identity papers. Another 100 systems were used as mobile units in remote regions of the country.

CD-ROM growth

An estimated 100 million CD-ROMs were manufactured worldwide in 1993, according to a report by the **Optical Publishing Association**. This represents a 150% growth over the previous year. A vast majority of the revenue came from the high-ticket database, professional and corporate products market segments. Multimedia game, educational and reference products contributed to less than 25% of the total revenue, according to the industry association.

Desktop agreement

Radius, Inc. has appointed **Portrait Display Labs** the exclusive marketer of its proprietary color pivoting displays for Macintosh and Windows desktops. Under terms of the agreement, Radius will also receive an undisclosed equity stake in Portrait. The agreement expands an existing business relationship between the two firms under which Portrait licensed Radius' pivoting display technology for sale in the Windows marketplace.

New Products

Pinnacle Micro, Inc. has introduced Tahoe-230, a portable 3½-in., 230M-byte magneto-optical drive.

According to the Irvine, Calif., company, the 1.8-pound product is a fully rewritable optical drive that connects to any SCSI interface or parallel port.

Tahoe-230 is backward compatible, automatically detecting and reading 128M-byte media.

An optional battery pack offers 3½ hours of typical use.

Tahoe-230 costs $999 for Macintoshes and $1,199 for PCs. The battery pack costs $199.

▶ *Pinnacle Micro*
(714) 727-3300

Samtron Displays, Inc. has introduced the SC-528UXL, a 15-in. Star Power monitor.

According to the La Mirada, Calif., company, the product features a 15-in. flat-screen display and Energy Star certification.

The SC-528UXL provides multiscan color display with high resolutions of 1,280 by 1,024 pixels and a refresh rate of 60Hz.

The product also offers digital on-screen controls and VESA power-saving capabilities.

The SC-528UXL monitor costs $499.

▶ *Samtron Displays*
(213) 802-8425

Lexmark International, Inc. has introduced the IBM LaserPrinter 4039 Plus with MarkVision, a Windows application that provides integrated network printer management capabilities.

According to the Lexington, Ky., company, the product lets users install and set up 4039 Plus printers, detect printing problems, view the printer configuration and save instructions for special printing jobs.

The product includes standard emulations for enhanced PCL 5 and PostScript Level 2 for maximum compatibility with industry standards.

Prices start at $1,749.

▶ *Lexmark International*
(606) 232-2000

Parallel Storage Solutions has introduced Quick/2Install, an OS/2 installation tool.

According to the Elmsford, N.Y., company, the product can install the OS/2 operating system in less than 15 minutes using a ¼-in. cartridge backup system.

Quick/2Install runs on three disks and comes equipped with OS/2 Version 2.11 on a ¼-in. cartridge tape.

The product can be used with the company's standard and minicartridge ¼-in. cartridge systems, the company said.

Quick/2Install costs $299.

▶ *Parallel Storage Solutions*
(914) 347-7044

Micro Express has introduced the Micro Express MicroFlex-PCI/VL/100, a PC designed to run graphical programs faster.

According to the Santa Ana, Calif., company, the base configuration for the system includes 16M bytes of RAM, 420M bytes of integrated drive electronics, a fast hard drive with a VESA caching controller (1M byte) and 256K bytes of RAM cache.

The product also includes a 15-in. noninterlaced video monitor, a Peripheral Component Interconnect video accelerator card with 2M bytes of RAM, 3½- and 5¼-in. high-density floppy drives, DOS 6.2, Windows 3.1, a 101-type keyboard and a mouse.

A Windows tutorial package is also included.

Micro Express MicroFlex-PCI/VL/100 costs $2,999.

▶ *Micro Express*
(714) 852-1400

KnowledgePoint, Inc. has introduced Performance Now for Windows, an interactive software program that allows managers to write employee performance reviews.

According to the Petaluma, Calif., company, the product includes an employee log for tracking an employee's performance between appraisals, a human resources advice feature and a language-checker.

Performance Now provides 26 performance elements that cover areas including quality, quantity, judgment, teamwork, communication skills and problem solving.

Performance Now for Windows costs $169.

▶ *KnowledgePoint*
(707) 762-0333

Objects, Inc. has introduced For Your Eyes Only, a data-security utility for PC users to secure their data.

According to the Danvers, Mass., company, the product combines a data encryption algorithm with a laser fingerprint on a floppy disk to create an unbreakable level of security for DOS-, Windows- and OS/2-based PCs.

For Your Eyes Only can protect single files to entire disks, and through a modem, establish a secure channel for transmitting information among host and remote sites.

For Your Eyes Only costs $99.95.

▶ *Objects, Inc.*
(508) 777-2800

FoxPro versions to speak French, German and Unix

By Cara A. Cunningham
PARIS

In an attempt to win over as many dBase users as possible, Microsoft Corp. will release French and German language versions of its FoxPro database this spring.

Version 2.6, which will be available for DOS and Windows in standard and professional editions, includes features to help novice users of XBase — users of dBase-compatible languages — access data and build applications. The upgrade also incorporates enhancements that encourage users of Borland International, Inc.'s dBase database to switch to FoxPro.

To lure Borland users, Microsoft added more than 50 dBase commands to the FoxPro language.

The new versions will be followed by FoxPro 2.6 for The Santa Cruz Operation's SCO Unix and Xenix operating systems in June, FoxPro 2.6 for PowerPC-based Macintoshes in September and a 32-bit upgrade for Windows NT in December, Microsoft said. These versions will be available in English, French and German.

Version 2.6 aims to help new XBase users by including "assistants," or dialogue boxes that walk users through the creation of components such as tables, queries and applications, the company explained.

To lure Borland users, Microsoft added more than 50 dBase commands to the FoxPro programming language, making it easier for developers familiar with the language to use FoxPro while offering greater compatibility with data stored in dBase formats.

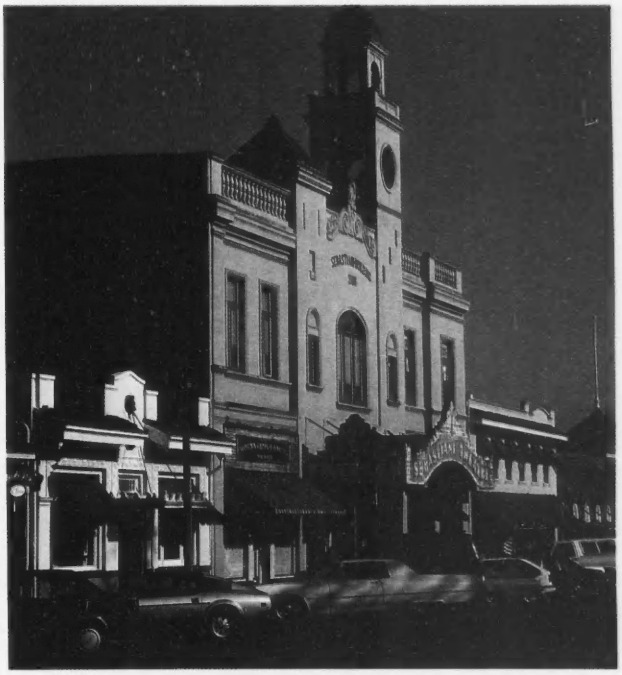
No runtime

The French and German standard editions include the FoxPro development database capabilities without the ability to create runtime applications. They will be available for DOS and Windows this month at the promotional price of $152 in France. Pricing varies in each country. Pricing after the promotion, which ends June 30, was not announced.

The professional edition will be available for both platforms in both languages in May. It includes the standard edition plus a distribution kit for creating royalty-free runtime applications, a connectivity kit for building applications that access other databases via Microsoft's Open Database Connectivity specification and a workgroup kit for mail-enabling applications.

FoxPro 2.6 Professional will cost $767 for new users and $510 for users upgrading from earlier versions or from the standard edition.

Cunningham is IDG News Service's Paris correspondent.



IF YOU'RE IN SONOMA, CALIFORNIA, THERE ARE 65 PEOPLE WHO CAN HELP YOU BUILD AN INFORMATION SYSTEM WITH WINDOWS NT.™

DataMost Corp. has introduced StatMost, a statistical analysis and scientific graphics software.

According to the Salt Lake City company, the product uses a graphical user interface in a DOS environment with most of the standard Windows interface power: multiple document windows, drop-down menus, status bar and on-line help system and mouse support.

StatMost offers a data sheet that performs advanced data management, complete statistical analysis, numerical computation and time-series analysis.

The product requires an IBM PC, XT, PS/2 or AT-compatible computer.

StatMost is available at an introductory price of $149 until Sept. 1.

▶ *DataMost*
(801) 484-3860

TouchStone Software Corp. has introduced Setup Advisor, a mini-utility that advises users on the installation and setup of hardware add-ons.

According to the Huntington Beach, Calif., company, the product can collect detailed system configuration data and make hardware setup recommendations for PC upgrades, including CD-ROMs, faxes, sound cards, modems and other equipment.

Setup Advisor also features Helping Hand, a set of steps designed for inexperienced users who need to collect information, select a new device and analyze setup requirements.

Setup Advisor costs $29.95.

▶ *TouchStone Software*
(714) 969-7746

Palm Computing, Inc. has introduced PalmUtilities, an assortment of utility products designed to improve the efficiency and performance of Zoomer personal digital assistants from AST Research, Inc.

According to the Los Altos, Calif., company, PalmUtilities frees up internal storage and lets users convert text files from a PC to the Zoomer.

The product includes a tune-up feature that cleans out unnecessary system files; a backup feature to safeguard data; and a small floating clock alarm that shows the current time.

PalmUtilities is available for $29.95

▶ *Palm Computing*
(415) 949-9560

Expert Software, Inc. has introduced Expert Forms for Windows, a forms design program that allows users to create and design forms.

According to the Coral Gables, Fla., company, the product comes equipped with line and box tools that include 14 line styles, 256 colors and 20 fill patterns.

Expert Forms for Windows costs $14.95.

▶ *Expert Software*
(305) 567-9990

Product shorts

Nokia Display Products, Inc. has introduced the Multigraph 447X, a 17-in. color monitor. The product delivers a resolution of 1,280 pixels by 1,024 pixels at a 75Hz refresh rate and provides a resolution of 1,600 pixels by 1,200 pixels at a 60Hz refresh rate. Cost: $1,250. Nokia Display Products, Sausalito, Calif. (415) 331-6622.... **Recognita Corporation of America** has introduced RollandRead Personal, a handheld scanner. The product is a true gray-scale scanner that displays images in up to 256 shades of gray with selectable 100 to 400 dot/in. mode. A 6-ft. cable is included. Cost: $195. Recognita, Sunnyvale, Calif. (408) 241-5772.... **CheckMark Software, Inc.** has announced CheckMark Payroll for Windows, a stand-alone payroll program. Users can calculate and print checks for employer expenses, enter employee hours in a spreadsheet-style window, update tax tables manually or use CheckMark's tax update service. Cost: $129. CheckMark Software, Fort Collins, Colo. (303) 225-0522.... **Ray Dream, Inc.** has introduced AddDepth for Windows, a graphics application that allows business users with Windows to add the impact of three-dimensional graphics to reports, newsletters, presentations and marketing materials. Features include the ability to import and export to all leading Windows graphics applications. Cost: $149. Ray Dream, Mountain View, Calif. (415) 960-0768.

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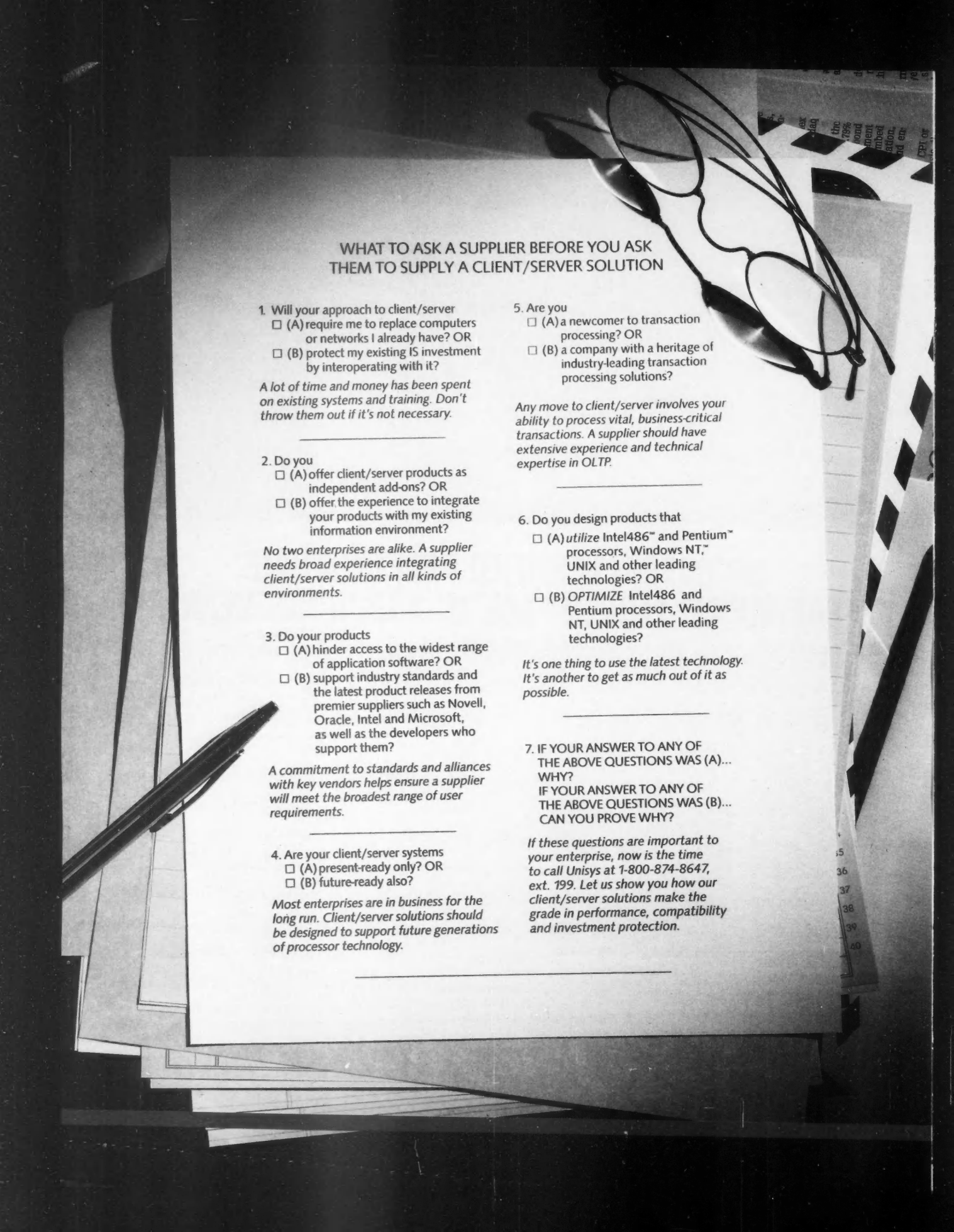

WHAT TO ASK A SUPPLIER BEFORE YOU ASK THEM TO SUPPLY A CLIENT/SERVER SOLUTION

1. Will your approach to client/server
   - ☐ (A) require me to replace computers or networks I already have? OR
   - ☐ (B) protect my existing IS investment by interoperating with it?

A lot of time and money has been spent on existing systems and training. Don't throw them out if it's not necessary.

---

2. Do you
   - ☐ (A) offer client/server products as independent add-ons? OR
   - ☐ (B) offer the experience to integrate your products with my existing information environment?

No two enterprises are alike. A supplier needs broad experience integrating client/server solutions in all kinds of environments.

---

3. Do your products
   - ☐ (A) hinder access to the widest range of application software? OR
   - ☐ (B) support industry standards and the latest product releases from premier suppliers such as Novell, Oracle, Intel and Microsoft, as well as the developers who support them?

A commitment to standards and alliances with key vendors helps ensure a supplier will meet the broadest range of user requirements.

---

4. Are your client/server systems
   - ☐ (A) present-ready only? OR
   - ☐ (B) future-ready also?

Most enterprises are in business for the long run. Client/server solutions should be designed to support future generations of processor technology.

5. Are you
   - ☐ (A) a newcomer to transaction processing? OR
   - ☐ (B) a company with a heritage of industry-leading transaction processing solutions?

Any move to client/server involves your ability to process vital, business-critical transactions. A supplier should have extensive experience and technical expertise in OLTP.

---

6. Do you design products that
   - ☐ (A) *utilize* Intel486™ and Pentium™ processors, Windows NT,™ UNIX and other leading technologies? OR
   - ☐ (B) *OPTIMIZE* Intel486 and Pentium processors, Windows NT, UNIX and other leading technologies?

It's one thing to use the latest technology. It's another to get as much out of it as possible.

---

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   IF YOUR ANSWER TO ANY OF THE ABOVE QUESTIONS WAS (B)... CAN YOU PROVE WHY?

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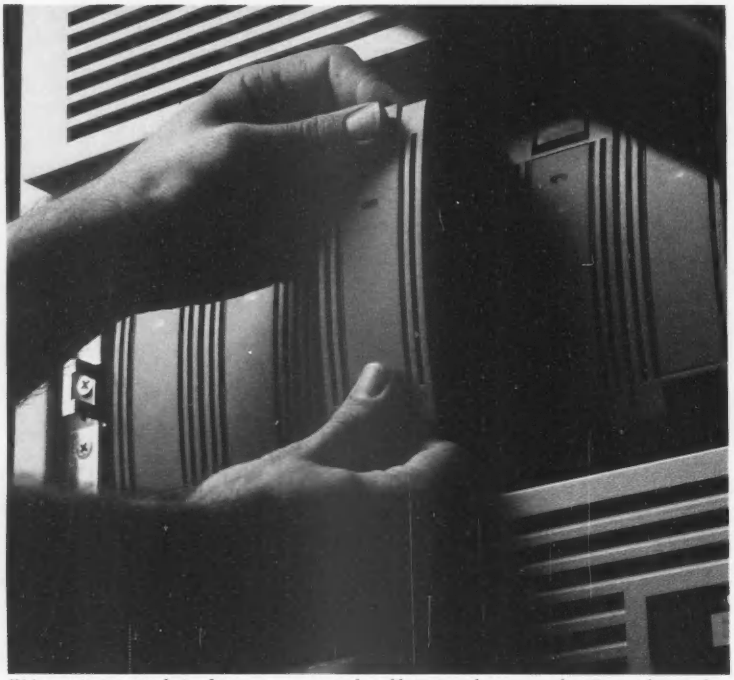

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MODEL 40s	[illegible]	9337-040	9337-140	9337-240
Front Panel Selectability	Yes	No	No	Yes
RAID 5	Yes	No	Yes	Yes
Mirrored Write Cache	Yes	No	No	Yes
Dynamic Read Cache	Yes	No	No	No
Customer Replaceable	Yes	No	No	No
[illegible]	[illegible]	N/A	Standard	25% FASTER

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MODEL 20s	[illegible]	9337-020	9337-120	9337-225
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RAID 5	Yes	No	Yes	Yes
Mirrored Write Cache	Yes	No	No	Yes
Dynamic Read Cache	Yes	No	No	No
Customer Replaceable	Yes	No	No	No
[illegible]	[illegible]	N/A	Standard	25% FASTER

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Commentary

Richard Finkelstein

Taking the lion's share

The Microsoft/Sybase divorce is more than a simple parting of ways. It is a schism that divides the client/server war into two camps.

On one side are the Unix vendors that believe customers want operating system independence and are willing to pay the price for it. On the other side is Microsoft, which wants to dislodge Novell's NetWare and Unix from server platforms by integrating a highly efficient set of products and services into its scalable Windows NT operating system. It's one size fits all vs. one stop buys all.

Microsoft is using Windows NT and SQL Server to extend Windows from the desktop into enterprisewide applications. By controlling the desktop and the server, Microsoft can control the direction of the industry. It is using its dominance of the desktop to deliver a suite of products that other vendors find very difficult to match. Microsoft can use its control of NT to gain the same advantage on the server. If it is successful, the other vendors can only grumble and follow.

The buck stops here

Microsoft's advantage over Unix and NetWare software competitors is that it does not expend a large amount of resources trying to support a myriad of different Unix and NetWare operating systems. By focusing its efforts on building and supporting a single operating system, Microsoft can optimize its products for NT and still have scalability on Intel, RISC and Alpha platforms.

Microsoft can design, test and support its Windows and NT products as a single cohesive unit. Single-vendor support is in many ways preferable to multivendor environments, which are plagued by problems that cannot be resolved and vendors that spend their time pointing the finger at other vendors. At least with a single supplier only one vendor is responsible for resolving problems. Whether or not the vendor fixes the problem is another question.

The plan is to use SQL Server NT as the basis for integrated mail services, enterprisewide administration tools and distributed database management. When and if these products become available, Microsoft will deliver them with a vengeance. Microsoft lists an unlimited-user version of SQL Server NT at $15,000 but offers it to its large customers for $2,500. One can understand how uncomfortable Sybase and Oracle must feel, especially when one considers that SQL Server NT performs as well as Unix

Finkelstein, *page 58*

Vendors expand object products

Upgrades aim to stir slow market

By Kim S. Nash

Hoping to turn up the volume on what has been a relatively quiet market, two of the larger object-oriented database makers recently announced and/or shipped enhanced versions of their products.

Ontos, Inc. in Burlington, Mass., last week announced Ontos/DB 3.0, an upgrade to its object database management system that includes data storage features designed to access information stored in non-object sources.

Meanwhile, Menlo Park, Calif.-based Versant Object Technology Corp. is expected to ship next week an upgrade to Versant ODBMS, which can store and manipulate objects generated from a variety of C++ compilers. Most object databases can handle only material produced by a single C++ compiler.

Because the object database market is still comparatively young, vendors are able to differentiate products by adding specific capabilities. But as offerings mature, they will start to look more homogeneous, observers said.

More features are "always good for [users]," said Jason Browning, a member of the technology staff at AT&T Bell Laboratories, which has been an Ontos user since October 1991. "Down the road, though, the various object companies will start to fight it out on price and speed," he said.

A world apart

Network management is an increasingly popular application for object databases. MCI Communications Corp. and Fujitsu Ltd., for example, contend that object-oriented technology makes sense for monitoring network activity because such applications are best handled with graphics rather than with relational or flat-file data.

In beta testing since January at Fujitsu, Texas Instruments, Inc. and a handful of other sites, Versant ODBMS Release 3.0 claims several key enhancements, the following of which are borrowed from the relational world:

- The ability to create and manage objects across distributed PC and Unix operating systems.
- Performance improvements of 20% and 100%, created by tweaking internal algorithms, speeding up two-phase commit routines and cutting transaction log overhead.
- Ability to do on-line, incremental backups of, for example, database changes since the last full backup.

Users will have to convert existing applications to access new functions in Release 3.0, said Dave Kellogg, Versant's director of marketing.

A migration utility will be included with the upgrade, which is scheduled to ship this week for Sun Microsystems, Inc. SPARCservers. Versions for Unix boxes from IBM, Hewlett-Packard Co. and Silicon Graphics, Inc., as well as PCs running IBM's OS/2 and Next Computer, Inc.'s NextStep, are due later this quarter.

On the way

Versant databases for Microsoft Corp. Windows 3.1 and Windows NT platforms are currently in beta testing, but officials did not specify a ship date. For its part, Ontos plans to ship an NT port of its database by late this year, motivated by a large contract with a San Francisco-area utility.

A three-way deal of Pacific Gas & Electric Co. (PG&E), Ontos and Microsoft calls for codevelopment of customer-service, billing, network management and other applications for an unspecified number of years, according to John Danielson, vice president of computer and telecommunications services at PG&E.

The utility's network expansion calls for Ontos/DB 3.0, which includes the following features:

- A storage management kit designed to let users access non-object data sources.
- Versioning and configuration management tools to let developers better track ongoing projects.
- On-line schema generation by which developers can model potential database structures on-line.

Notes provides image of the future

By Ellis Booker

■ To bring electronic document imaging to the widest possible audience and drop it onto almost every desktop, two things must happen. Large and small imaging systems must interact seamlessly with corporate infrastructures, such as electronic mail and Lotus Development Corp.'s Notes, and the systems need to become much easier and more intuitive to use and configure.

Strides in both areas were seen at the Association for Information and Image Management (AIIM) show and conference held recently in New York.

On the infrastructure front, this year's AIIM show was notable for the broad support of Notes. (Lotus, at AIIM for the first time this year, set up shop in a relatively modest booth, belying the importance of its groupware product to the other show vendors.)

"Yes, it's definitely become a checklist item for customers," acknowledged one well-known imaging vendor that has yet to announce a schedule for Notes support.

At the show, vendors used Notes to ship images to casual users from production-oriented imaging systems or as a vehicle for adding unstructured data to an imaging application.

On the ease-of-use front, the show proved that a graphical user interface is more than a pretty way to work.

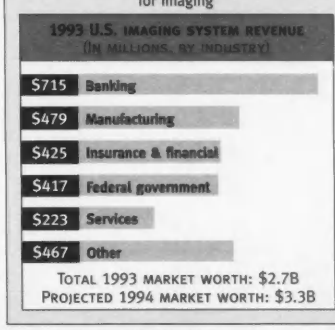
At the crowded Watermark Software, Inc. booth, for instance, the company demonstrated the industry's first imaging product that is compliant with Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0.

Shipping now, the Watermark Professional Edition ($60 to $300 per seat) offers image enabling by which objects are placed, either manually or via OLE automation, into documents created by other OLE 2.0-compliant applications.

Imaging, *page 54*

Imaging industries

The financial sector remains a prime candidate for imaging



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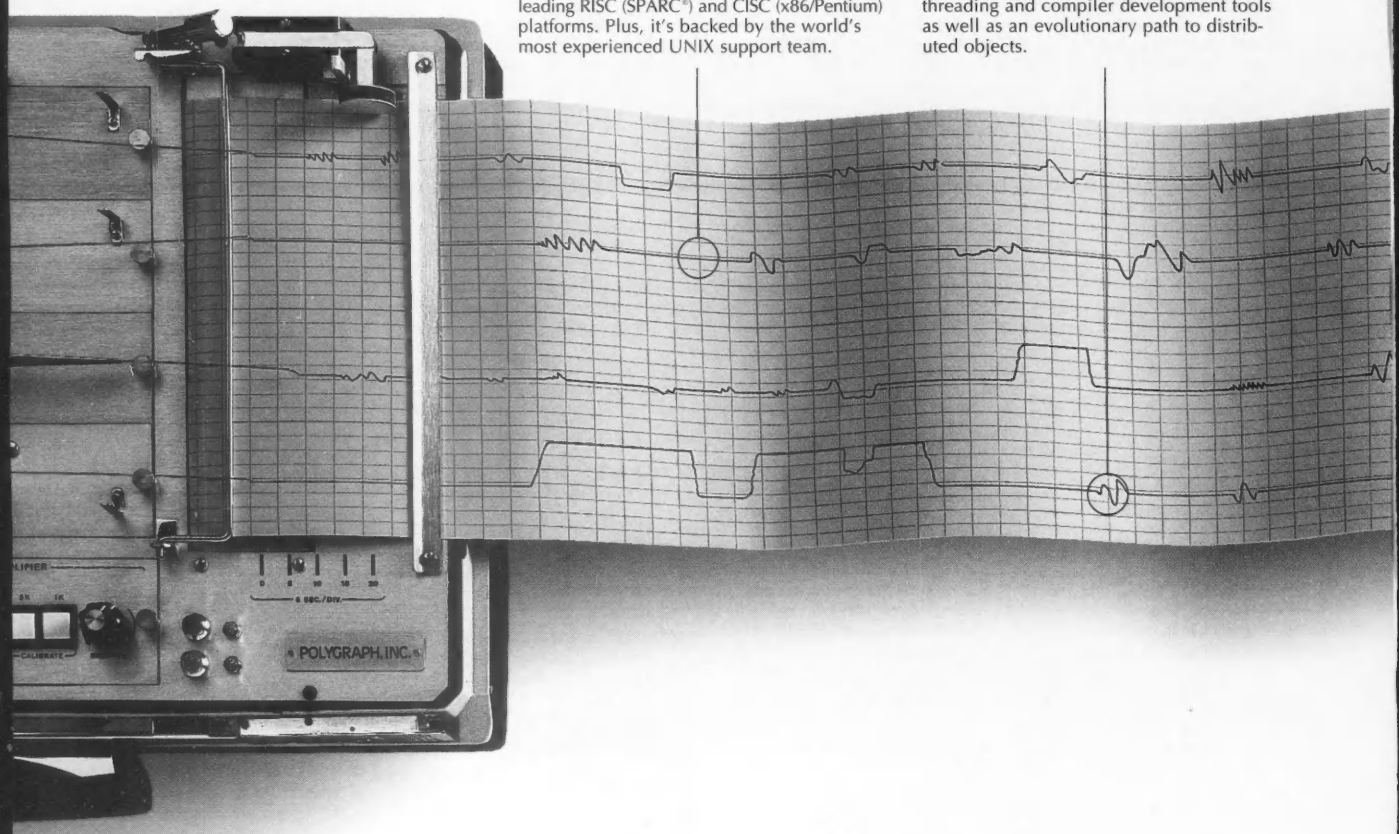

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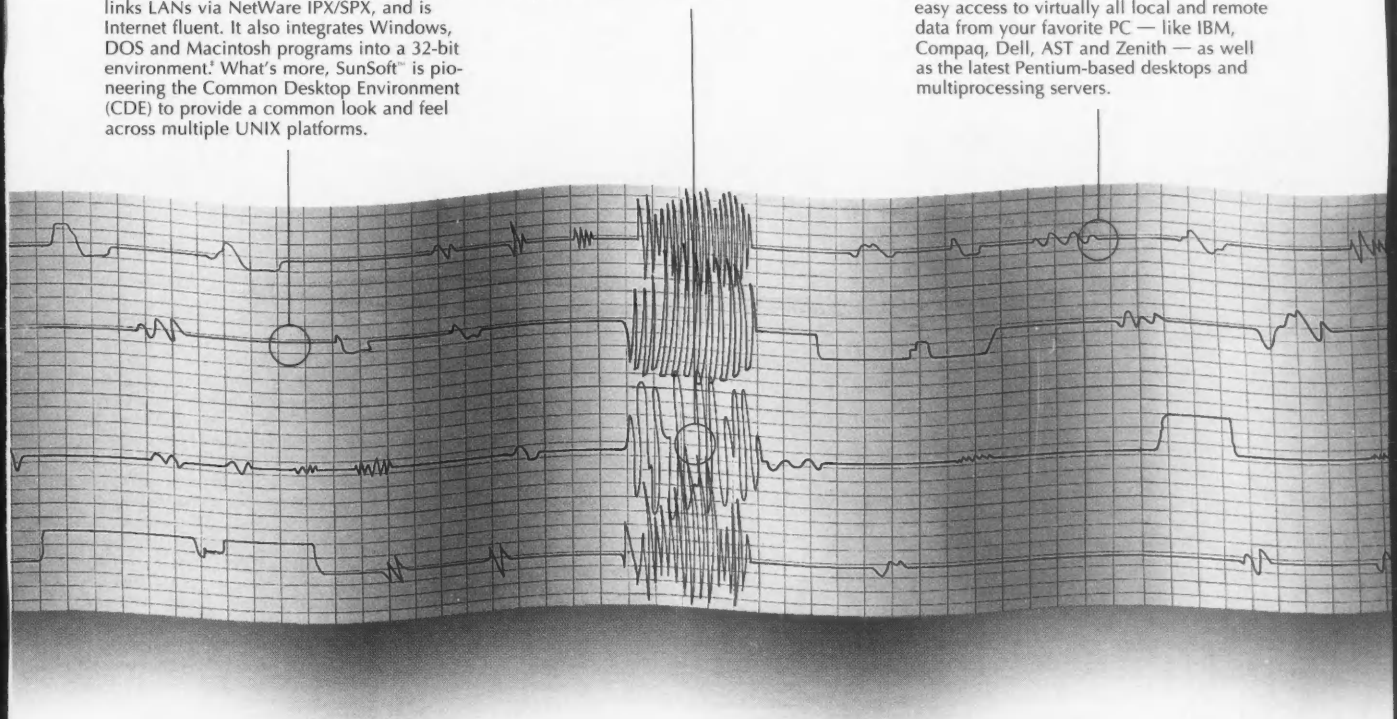

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Notes provides image of the future

CONTINUED FROM PAGE 51

Unlike OLE 1.0, these embedded objects can be edited from within the object's new home — a word processing document or a spreadsheet.

Meanwhile, Viewstar Corp. in Emeryville, Calif., showed its recently announced Process Architect system for designing workflow paths. Process Architect uses drag-and-drop icons, preconfigured objects for various tasks and even application templates for different industries. The product is expected to ship by the end of the year.

Thomas E. Carroll, project director for imaging systems at the Washington State Department of Labor and Industries in Olympia, agreed that pervasive, enterprisewide imaging is "generally where things are going."

"But," he added, "a lot of what the advanced technologies people are talking about aren't being implemented here yet."

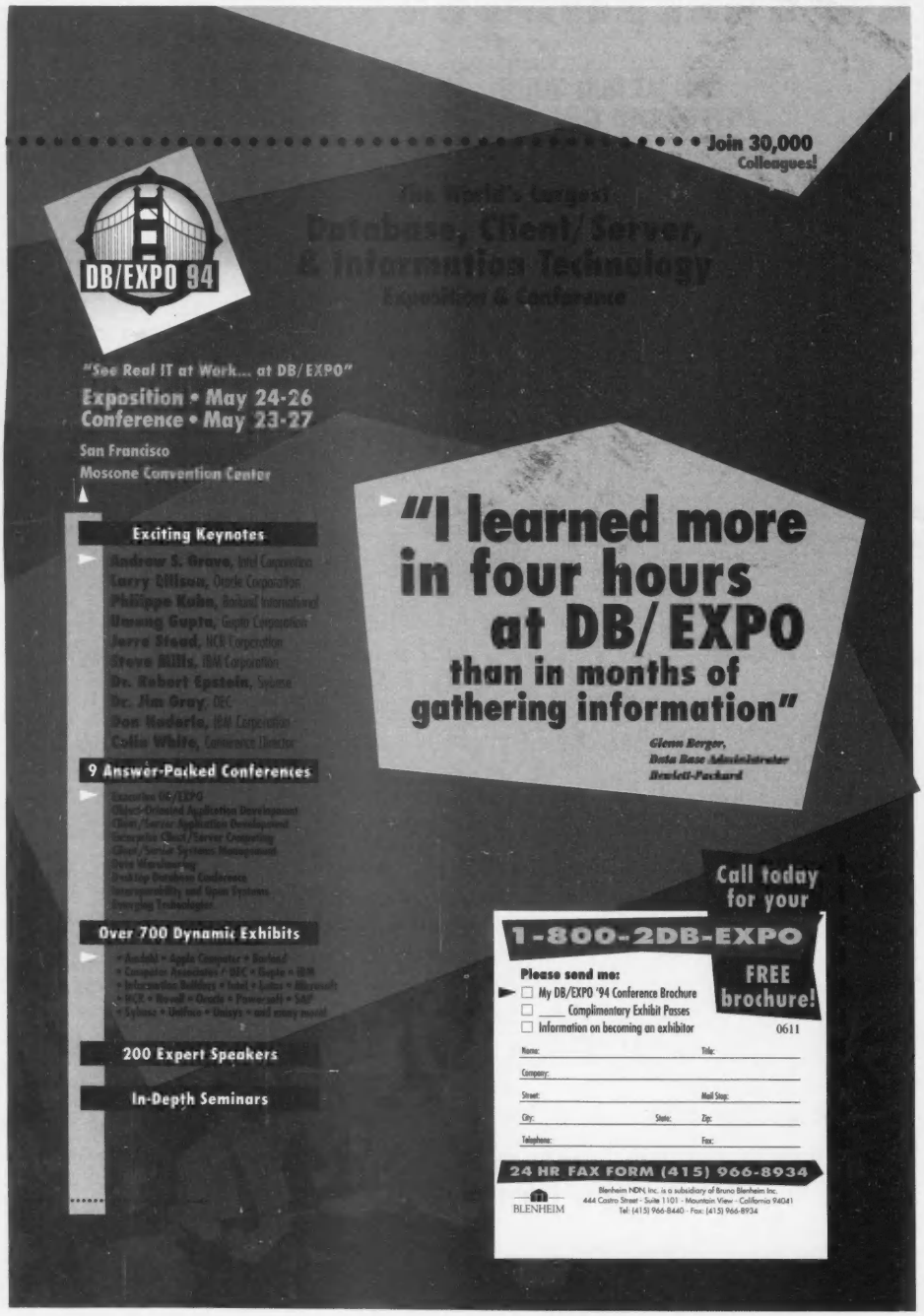
Quantum leap

The state agency, which won an award for excellence in imaging at AIIM from BIS Strategic Decisions in Norwell, Mass., is completing an $18 million, 500-seat imaging system for the Washington State Fund. The fund furnishes worker's compensation insurance for 120,000 employers and 1.3 million workers.

The system, which uses Hewlett-Packard Co. HP 9000 processors to run the Plexus XDP imaging system from Recognition International, Inc., is expected to reduce the time it takes to route documents to agents from two to three weeks to a single day.

Other products and announcements at the AIIM show included the following:

- **HP** introduced a 20G-byte, "introductory" optical jukebox for $6,995. The unit is upwardly compatible with HP's top-of-the-line 188G-byte system. The market leader in the jukebox business, HP also announced a software management system that allows a user to configure a jukebox into a single logical drive.
- **IBM** said its ImagePlus VisualInfo document management platform, introduced in February, would be generally available in 60 days. To muster third-party interest, IBM sold a $49, CD-ROM-based demonstration developer's kit for the product.
- **Lotus** said a point release of Notes would include an on-line workflow guide, as well as workflow databases.
- **Adobe Systems, Inc.** offered a technology demo of what it called "Acrobat Page Recognition Software." The system uses optical character recognition to translate a bit-mapped page image into an Acrobat file format while retaining the original document's formatting and font information items typically lost when an image is processed through optical character recognition software.
- **SHL Systemhouse, Inc.** demonstrated SHLConnect, a product that uses the Keyfile Corp. Document Server as a front end to IBM's host-based (OS/2 or MVS/ESA) VisualInfo Library and Object Servers. SHLConnect allows VisualInfo to support a mix of VisualInfo clients for OS/2 and Keyfile clients for Windows.
- **Impower**, a Salt Lake City start-up founded by a group of former Novell, Inc. employees, announced the first scanning and imaging application loadable modules (ALM) created with Novell's AppWare software. Called ImagePower Scan/View, the general-purpose software is priced at $349 per seat. Impower's ALMs are based on the ViewDirector from TMS, Inc. in Stillwater, Okla.



Brief

Novell LANalyzes

Novell, Inc. recently announced its LANalyzer for Windows 2.1, which it said is the first Windows-based network analysis tool that supports NetWare, UnixWare, Macintosh, Unix and IBM networks. The $1,495 portable LAN analysis tool supports 100M bit/sec. Ethernet technologies and networks using Network File System and SNA, Novell said.

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(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

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80. Educator, Journalists, Librarians, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

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Finkelstein

CONTINUED FROM PAGE 51

RDBMSs but costs 10 to 20 times more. Because SQL Server NT can be run on RISC and Alpha boxes, Oracle and Sybase will find it difficult to keep their current pricing structure and still be competitive.

Unix RDBMS vendors such as Sybase, Informix and especially Oracle are caught in a bind. By pursuing a one-size-fits-all strategy that addresses widely dissimilar and diverging operating system platforms, the Unix RDBMS vendors constantly face the engineering nightmare. This forces RDBMS vendors into design compromises that affect the performance and stability of their products. It also makes it very difficult to support and maintain software because operating systems are constantly changing and there are so many versions. Rather than get involved with these chronic problems, Microsoft has chosen to do an end around and put all its efforts into its single scalable NT operating system.

While Microsoft is speeding along, Unix vendors are frittering away their time arguing about nonexistent standards and toothless standards committees. For those who believe that customers will revolt against Microsoft's "proprietary" strategy and vote for "open" Unix, I would point out that customers do indeed purchase proprietary operating systems in droves.

The only company that can challenge the Microsoft juggernaut is IBM. IBM has its own set of desktop and server operating systems, which are technically competitive but are dying in the marketplace. IBM is not going anywhere until OS/2 can challenge Windows on the desktop, and OS/2 doesn't have a prayer as long as it depends on OS2/Windows for its application support. One would think that by this time IBM would have figured this out, but it still doesn't get it. Well, maybe it's time for IBM to pass the baton over to Microsoft as the new king of the hill. Or maybe it's time for IBM to wake up and do battle.

Finkelstein is president of Performance Computing, Inc., a Chicago consultancy specializing in client/server technology. He can be reached by CompuServe at 72240,2536.

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BXAWC02

IBM aims to empower RS/6000 workstations

By Jean S. Bozman

As Apple Computer, Inc. rolled out its PowerPC-based servers last week, IBM was planning to put its PowerPC chip into more RS/6000 workstations that are expected to be announced this month, industry analysts said.

The new RS/6000s will be based on the PowerPC 601 chip, which is already running in IBM's desktop RS/6000 Model 250. IBM's move is designed to respond to new low-end workstations fielded by Hewlett-Packard Co., Sun Microsystems, Inc. and Silicon Graphics, Inc. in recent months.

However, the Model 250 — introduced in September with a 66-MHz PowerPC chip — may be replaced by a faster system based on an 80-MHz chip, several analysts said.

"They've got to use the PowerPC across the low end and be more aggressive in price/performance," said Dominic Ricchetti, director of workstation research at Dataquest, Inc. in San Jose, Calif.

Users are anticipating the PowerPC units as the first wave of more powerful RS/6000 desktops and servers.

"There is a need for that kind of processing in the [IBM] AIX world," said Roy Dodd, information systems director at The Good Guys, Inc. retail chain in Brisbane, Calif. "I've got 1,500 users, and I have to spread those across three servers." He now has the RS/6000 950, 980 and 990 servers but said he would prefer to install fewer, more powerful servers.

Bill Moran, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y., said IBM is playing catch-up on low-end workstations and high-end symmetrical multiprocessing (SMP) servers.

Analysts said they expect IBM later this year to announce AIX 4.0 as an enhanced version of its Unix operating system, with support for multithreaded applications such as database applications on the SMP machines.

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Just about everyone who's ever used a computer has experienced the same thought: Wouldn't it be great if setting up or upgrading your machine was as easy as turning it on?

The idea is called "Plug and Play." People have been talking about it for years. But now, an ongoing partnership between Compaq and Microsoft, working with other industry leaders, is actually making it happen.

Plug and Play is the result of some very fresh thinking in both hardware and software – an accomplishment that tapped the combined engineering expertise of both companies. Together, Compaq® computers and the next version of the Microsoft® Windows™ operating system (code-named Chicago) will deliver the long-promised benefits of true Plug and Play: easy setup, easy expansion and easy connection to peripherals.

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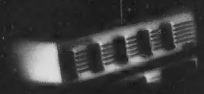


BOB FISHER is the Systems Analyst at First of America Services, Michigan.

"Primarily, we evaluated four routers — Cisco, Wellfleet, CrossCom, and Proteon — for SNA internetworking, IPX and IP capabilities.

"No contest."

"When it came to hardware configuration, Proteon provided extremely easy access. You could pop the cover off and readily change interfaces without having to string a bunch of cables. They provided flash memory for the operating system and configurations, so there was never any booting off a diskette. The LEDs on the front panel were also very nice. A quick look would tell you whether a given interface was up or not. None of the other router vendors provided that. In terms of speed and efficiency, Proteon beat the others hands down. And as far as the overall support for different topologies, Proteon worked well with everything. Unlike other brands we tested, the Proteon router was a true gateway.

"Our router is incredibly easy to use."

"Reliability was another major criteria for selecting First of America's new router. You see, if we can't service our customers, we're out of business. Our network ties together six hundred bank branches. These terminals simply can't go down. So choosing a router to carry this traffic wasn't a decision I took lightly. Proteon proved to have the reliability we need. And if any questions did arise, Proteon's support representatives were readily available and very knowledgeable.

"Proteon's reliability is second to none."

"Our bank is in acquisition mode, so integration is critical. After any merger, we have to integrate new networks into ours while migrating their applications. Right off the bat, our routers have to support all kinds of topologies. By deploying the Proteon DNX router at regional sites, we were able to provide these locations with SNA support very quickly.

"We'll integrate any multiprotocol network."

"In terms of overall technology and performance, I'd have to say the Proteon router is absolutely the best."

"Amen."

proteon

For more details on the First of America story and our free Guide to Integrating SNA and Multiprotocol Networks, call 1-800-830-1300. Dept. 501

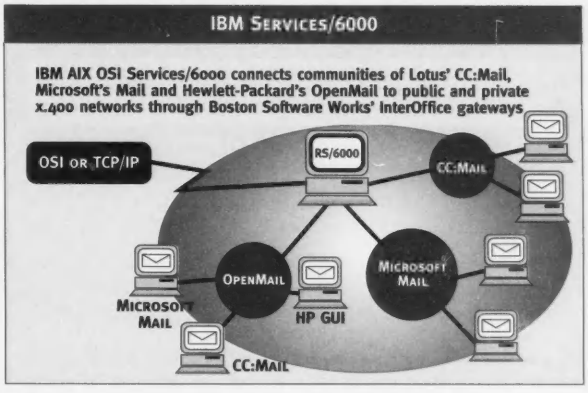
HP, IBM scramble to fill messaging void

By Lynda Radosevich

■ Large customers are looking for messaging services that are more robust than LAN vendors' current offerings, and Hewlett-Packard Co. and IBM are stepping in to fill this void with revamped X.400 services that reside on their respective Unix workstations.

Users have long complained that PC-based electronic mail is difficult to scale and integrate with other systems. That, plus explosive growth — up to 83% in two years, according a recent study — has information systems staffs looking for robust back-end messaging services. Vendors are scrambling to meet this need before Microsoft Corp.'s and Lotus Development Corp.'s rearchitected messaging servers hit the market next year.

At the Electronic Messaging Association (EMA) conference in Anaheim, Calif., last month, IBM outlined a long overdue messaging plan aimed at its customers who want a client/server messaging strategy based on the RS/6000 and open systems guidelines.



A modular plan

IBM's strategy, called the AIX OSI Services/6000, includes a Message Transfer Agent (MTA) based on the 1988 version of the X.400 standard. The MTA, operating on the RS/6000 and the AIX operating system, can natively route messages over Open Systems Interconnect (OSI) or TCP/IP networks. It also includes file transfer and communications services over local- and wide-area networks.

Kuo & Associates, a Fort Collins, Colo., systems integrator for government organizations, uses IBM's current OSI messaging and file transfer product and plans to install AIX OSI Services/6000 to comply with its customers' Government Open Systems Interconnect Profile (GOSIP) II requirements.

"Before, you had to know a lot about OSI and use special procedures for installation and support. The new version is more modular so you can buy the pieces that you need," said Kenneth Lini, a vice president at Kuo. He also said the revamped product line is "well-integrated" with IBM's systems management interface tool for the RS/6000.

A vital piece of IBM's plan is a set of gateways from Boston Software Works that will connect Lotus' CC:Mail, Microsoft's Mail and HP's OpenMail to the IBM MTA. Boston Software Works will supply the gateways by modifying its InterOffice line.

The combination should allow users of one messaging system to send objects, including text memos, revisable work processing documents or binary attachments such as spreadsheets, to users on incompatible systems. It also takes care of synchronizing directories and users' addresses.

The third leg of the strategy is an arrangement with Isocor in Los Angeles. Isocor will develop a version of its Isotrade Electronic Data Interchange server, which is based on the X.435 standard, for the IBM MTA.

IBM strategy . . . finally

"Big Blue is finally showing signs of having a messaging strategy," said David Whitten, an analyst at Gartner Group, Inc. in Stamford Conn. "It should be attractive to companies on mainframes that are looking for solutions now" instead of waiting for the LAN vendors to deliver.

Currently, IBM offers to sell Lotus CC:Mail and Notes to its mainframe OfficeVision and Professional Office System customers. However, the Lotus and IBM products do not interconnect well.

Meanwhile, HP introduced at the EMA show new management capabilities including continuous access for its OpenMail system. The HP system lets end users keep their desktop clients such as Microsoft Mail, CC:Mail and, most recently, Notes. At the same time, customers can use HP's back-end Unix server with a single unified message store, X.400 message transport and X.500 directory services.

Other OpenMail updates include the following:

- Support for up to 25% more users, or roughly 3,000 per server, because of more tightly written code.
- Exchange with X.500 directories.

Messaging, *page 69*

Network management

Lannet simplifies intelligent hubs

By Stephen P. Klett Jr.

Lannet, Inc. in Irvine, Calif., recently took steps to simplify the management of networks based on its MultiNet family of intelligent hubs. The company announced virtual networking and Remote Network Monitoring (Rmon) support for its graphical network management application for Hewlett-Packard Co.'s OpenView.

Version 2.0 of Lannet's MultiMan/OV platform allows MultiNet users to create and manage virtual LANs consisting of workstations connected via Lannet's LANswitch Ethernet switching modules.

The virtual-management capabilities are provided in a separate graphical application called VirtualMaster/OV. Network administrators can use this to create virtual networks and assign users to the different logical segments by simply pointing and clicking, the company said.

Analysts said these virtual capabilities are vital because they offer users a new level of flexibility as well as potential cost savings.

"With virtual LANs you can make the network adapt to the way a company works instead of making the company adapt to the network," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. For example, virtual LANs can designate who is going to be in a workgroup through software instead of requiring network administrators to physically plug users into a concentrator, Howard said.

Cost reduction

The primary benefit to users lies in reducing the labor costs associated with making network adds, moves and changes, which some analysts estimate cost $300 to $400 each.

Many vendors are talking about virtual LAN capabilities, but a key differentiator in Lannet's offering is its ability to support hub-to-hub virtual networking. Most vendors' initial products have been limited to a single hub.

In addition to VirtualMaster, the following Rmon applications are also available for MultiMan/OV 2.0.

- **RmonMaster/OV:** Provides network health and alarm tools that work together to automatically perform customized baselining of network traffic and notify network administrators when threshold conditions are exceeded. Also provides tools to perform statistical analysis of traffic volume over the MultiNet hub's four Ethernet buses and LAN segments.
- **DecodeMaster/OV:** Fully decodes and displays all major LAN protocols, which enables network administrators to define their own filters to allow customized packet capture and display to troubleshoot the network. For example, traffic between two nodes could be filtered to show only IPX packets, according to Lannet.
- **InterMaster/OV:** Performs packet filtering and statistic analysis for graphically managing Lannet's integrated Ethernet and Token Ring bridge modules.

Integrated support

DecodeMaster and RmonMaster require Lannet's Integrated Ethernet Remote Probe, which is a RISC-based four-segment Rmon probe for the MultiNet hub. The $4,995 probe allows all four of the MultiNet's internal Ethernet segments to be managed simultaneously.

"The integrated Rmon support in the hub provides automation, which is another example of a network product doing something fairly routine but unique to individual networks [and] that managers no longer need to do," Howard said. Several of the hub companies, including Cabletron Systems, Inc. and Ungermann-Bass, Inc., are working to provide similiar capabilities.

MultiMan/OV 2.0 will ship this month for $3,995, which includes the VirtualMaster and InterMaster applications. RmonMaster and DecodeMaster will also ship this month for $3,995 each.

Major Bulletin Board has general pull

By Gary H. Anthes

A software package for setting up on-line information services, immodestly called The Major Bulletin Board System (BBS), has attracted some 15,000 buyers ranging from the U.S. Joint Chiefs of Staff to corporate customer service groups to basement-based phone-sex operators.

The Major BBS supports electronic mail, multiuser teleconferencing, file transfers, public forum areas and file libraries with keyword searching, gateways to other commercial E-mail services and an optional module for building graphical user interfaces.

Stats for you

There are 60,000 computer bulletin boards in the U.S. — more than double the number 18 months ago — used by 12 million people a day. By 1995, 36% of the U.S. population will own PCs and 23.8 million, or 65% of those machines, will be equipped with modems.

—Boardwatch Magazine

The product, from Galacticomm, Inc. in Fort Lauderdale, Fla., will support up to 256 simultaneous users on a single Intel Corp. 80386-based PC. Prices for the software range from $259 for two users to $10,000 for 256 users. Users can connect via modem, LAN, serial connection or X.25.

The company also sells a $495 GalactiBoard, which will expand a PC's four-port capacity to eight ports, and a 16-channel GalactiBox for $1,495. Multiple GalactiBoxes can be combined for still greater capacity.

A guerrilla weapon

The Major BBS fills a gap in the current networking environment, allowing employees to communicate internally as well as to customers, sales prospects and vendors, said Scott J. Brinker, Galacticomm's president and chief executive officer. "There are tools [LANs] for connectivity in-house, and there are these huge commercial on-line services that exist outside of any one company," he said. "What a BBS can do is act like a hub between all these things. It's a guerrilla weapon for information exchange."

Blue Cross/Blue Shield of Illinois uses Galacticomm to electronically collect 990,000 claims a month from doctors and hospitals. It saves up to $1.50 per claim over paper processing, said Mark Flint, lead programmer/analyst.

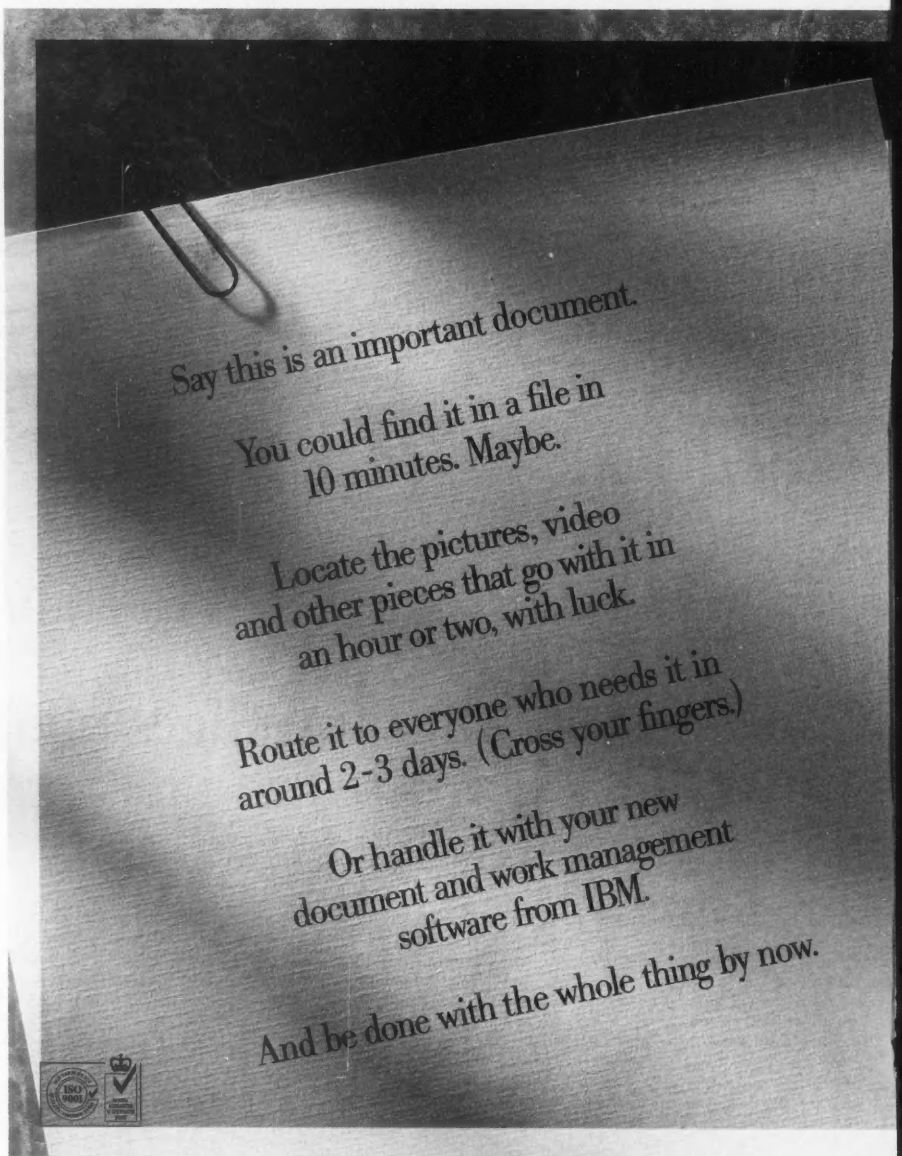
Users dial into The Major BBS and transfer claims collected during the day or week to an Intel I486-based, 66-MHz PC attached to a Novell, Inc. LAN. When the user logs off, that PC passes the claims to another PC on the network, which does some processing and then sends them to a mainframe.

Overnight, the mainframe prepares claims reports and routes them back to the bulletin board PC where they are appended to E-mail messages for retrieval by the users who submitted the claims. "That saves an awful lot of postage and of course is much quicker," Flint said.

The National Technical Information Service of the U.S. Department of Commerce uses The Major BBS for its FedWorld service, which offers users E-mail and access to hundreds of government databases. It runs on a Pentium-based LAN server and supports 70 modems for dial-up access and 16 direct lines to the Internet for Telnet access.

According to Ken Royer, FedWorld system manager, the service has 74,000 users and supports 3,000 calls a day, many of which pass through a gateway to other federal government BBSs. "This is the place to start if you want to start your own on-line service," Royer said.

He said he is putting two Hewlett-Packard Co. HP 9000 servers on the LAN to support databases from government agencies. They will be searchable using the Internet lookup tool Gopher and text-search tool Wide Area Information Service. "Galacticomm is versatile enough so that we can set it up so that when you see button A, you can hit it and you'll get into this big search system on the HP," Royer said.



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New Products

Frye Computer Systems, Inc. has introduced The Frye Utilities for Networks-Software Metering and Resource Tracking Version 1.0, a software metering tool.

According to the Boston company, the product is a Novell, Inc. NetWare Loadable Module tool that addresses the need for managing and enforcing software license compliance for applications and application suites installed on Novell's NetWare-based networks.

Features include a user checkout feature for monitoring software used on stand-alone PCs and the ability to meter popular software suites. The product also has a functionally integrated alerting capability to interface with Frye's NetWare Early Warning System, a utility that monitors network server activity and performance.

The product costs $495 for a 100-user server license and $995 for a 250-user server license. Server licenses for 1,000 users are available for $3,795.

▶ *Frye Computer Systems*
(617) 451-5400

Data Race, Inc. has introduced the Netracer family of connect-on-demand multiprotocol Ethernet bridge routers.

According to the San Antonio, company, Netracer allows users to extend LANs to remote branch offices using dial-up, leased, digital or Switched 56 digital lines.

Netracer features on-demand Ethernet LAN bridging and routing; integrated V.32bis dial-up modem; integrated 10-BaseT, 10Base2 and attachment unit interface connections; Simple Network Management Protocol Agent for remote network management; and a transparent 802.3 Mac layer Ethernet bridge.

Pricing starts at $2,695.

▶ *Data Race*
(210) 558-1900

Enterprise Software Corp. has introduced Net/OverView, a networked systems management product.

According to the Marina del Rey, Calif., company, Net/OverView monitors and reports network service availability, automates network problem diagnosis and associated impact assessment and provides a framework for automated failure recovery.

Net/OverView diagnoses a failure when it occurs, noting the causes along with the impacted users and applications.

Pricing starts at $30,000.

▶ *Enterprise Software*
(310) 305-7721

Advanced Visual Data, Inc. has introduced Visual Simulation, a suite of services for marketing and engineering users in telecommunications companies. Visual Simulation creates animated models of complex systems, services and networks.

According to the Waltham, Mass., company, the product offers customized presentations that represent a variety of components and transactions of telecommunications systems or networks.

Components include routers, switches, bridges, processors and software.

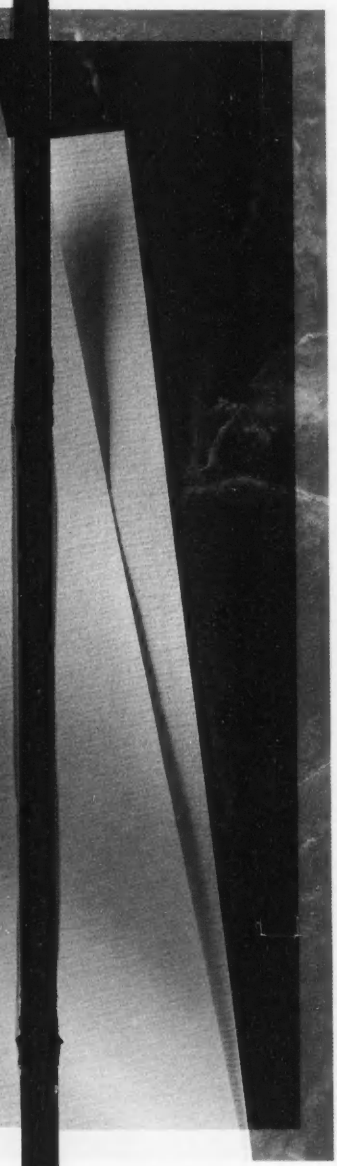
Transactions include data packets, fax transmissions, voice messages and video signals.

Prices start at $10,000.

▶ *Advanced Visual Data*
(617) 890-4300

Product shorts

The Wollongong Group has introduced PathWay Access 3.0 for Windows, an optimal TCP/IP product designed for Windows and DOS applications, client/server tools, network operating systems and database environments. Enhancements for the product include TrueType scalable font support for all terminal emulations and a native Windows user interface for Access applications. The number of sessions is limited only by the number of sockets. Cost: $350 for a single-user license. The Wollongong Group, Palo Alto, Calif. (415) 962-7100.... **Walker Richer & Quinn** has announced Reflection for 3270, a product that combines TCP/IP-based software with IBM mainframes. The product offers a command-driven architecture, application programming interface support and an integrated scripting language. Cost: $299. Walker Richer & Quinn, Seattle (206) 324-0407.



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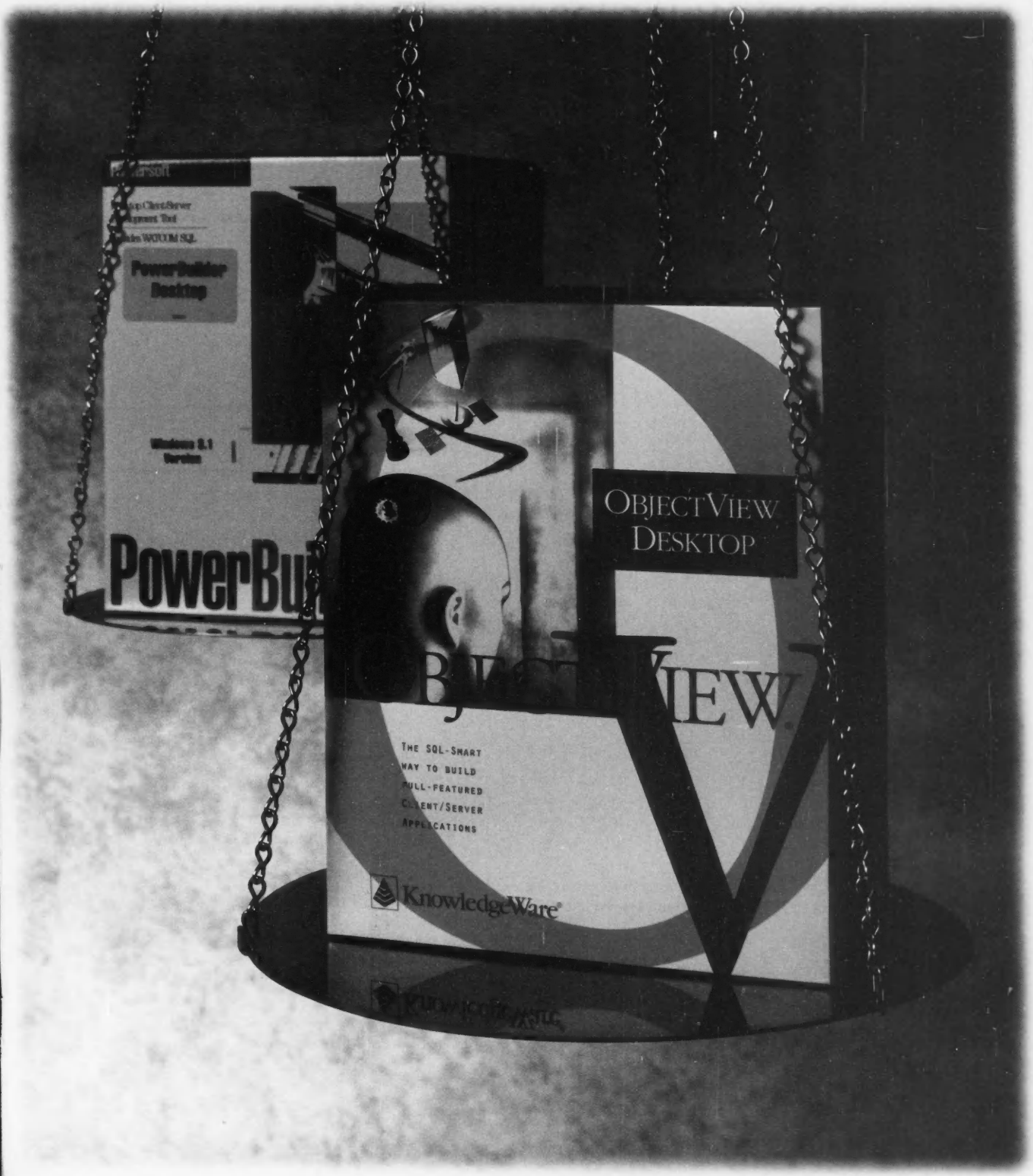
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Fax software

Lotus to fix glitch in CC:Fax

By Lynda Radosevich

A problem has emerged during beta tests of Lotus Development Corp.'s CC:Fax software that the company said it will fix.

Lotus' fax software does not automatically recognize nontext attachments such as spreadsheet files, and it reacts by dropping the attachments before sending the fax. It does work fine, however, with text-only documents.

"CC:Fax stinks," said Al Petras, a technology director and otherwise congenial CC:Mail user at Boston Edison Co.

While the 2.0 version in beta testing permits users to issue a command that "prints" the document to a fax machine, it requires manual intervention to ensure that the attachments come over with the fax. Therefore, if the fax is to be sent to a large number of people, ensuring the attachments' arrival is even more time-consuming.

Larry Crume, vice president of messaging and mobile computing at Lotus, acknowledged in a recent interview that the problem exists and said the company will work on it. But he did not specify how or provide a deadline for when it will be resolved.

Other options

Meanwhile, Resource Partners, Inc., a small Wakefield, N.H., company, makes a product that automatically handles attachments for CC:Mail faxes.

Another option is available from Keyword Office Technologies Ltd., which recently introduced PostFax, a package said to enable users to send compound documents such as faxes via electronic mail without any tinkering. The software will ship next month. Keyword will install it at customer sites and is working with E-mail vendors to integrate it into their products, the company said.

Messaging

CONTINUED FROM PAGE 63

- GOSIP compliance.
- Bulletin boards with access control that can be replicated among servers.

Users on the EMA show floor appeared to be very interested in OpenMail. Several said they are considering it as an alternative to the Lotus Communications Server and Microsoft's Enterprise Messaging Server (EMS), largely because it is available now and is stable.

Ruth Fleming, a technology analyst at Hallmark Cards in Kansas City, Mo., is one of those interested in OpenMail. However, Hallmark has Microsoft Mail on Windows and Macintosh desktops, and the Macintosh clients cannot run on OpenMail.

Twice the growth

In Fortune 2,000 companies, the electronic messaging annual growth rate is more than twice as high at branch offices than at headquarters: 26% at branch offices vs. 12% at headquarters. Most of the branch offices have LAN-based systems, according to the Electronic Messaging

A Microsoft official suggested that users such as Hallmark wait for EMS, but several balked because Microsoft has not yet committed to a ship date and EMS requires a new operating system: Windows NT Advanced Server.

"Like we want to run mission-critical applications on Release 1.0 software on a Release 1.0 operating system," said a show attendee who wished to remain anonymous.

Banyan messaging products part of broader strategy

Messaging, directory services to cross network operating systems

By Lynda Radosevich

Banyan Systems, Inc.'s first set of messaging products since acquiring electronic-mail provider Beyond, Inc. in February will include a rearchitected messaging service for use with Banyan's Vines or Novell, Inc. networks and a new version of the BeyondMail client for Vines.

The products are part of a broader Banyan strategy to offer network services such as messaging and directory services that can cross network operating systems and hardware platforms. They also tie into the company's plans to offer client software based on Beyond technology as the building block for network applications such as groupware and workflow applications [CW, Feb. 14].

In for the long haul

Both of the recently announced messaging products are aimed at supporting sophisticated message-enabled applications. They signal that Banyan is "positioning itself as a messaging vendor and not just for [its] installed base," said Eugene Lee, a Banyan marketing director for messaging products.

But to accomplish the latter, Banyan must "have better marketing to have appeal beyond the Vines community," said Priscilla Emery, an analyst at New Science Associates in Southport, Conn.

The updated messaging server, called Intelligent Messaging III, will ship in June as a native part of the Vines operating systems and as an unbundled service for NetWare networks. Unix versions are due this year, and a Microsoft Corp. Windows NT version is promised for 1995.

E MAIL

What it costs

Banyan's Intelligent Messaging Server, which will ship June 20, will cost $1,495 per server. The BeyondMail 2.0 client software for Vines will also ship in mid-June and will start at $695 for a 10-user version.

New way to store

Intelligent Messaging's most impressive new feature, according to users and analysts, is its method of storing messages in a database as objects that other applications can use. The technology is similar to that found in Banyan's StreetTalk III directory, which also uses an object model.

That feature could enable a company to send purchase orders to a central message database, where they would be accessible to other applications such as marketing or sales. Also, the order could be automatically routed to accounting, for instance, using rules technology, Lee said.

The Banyan object model "could be a step toward the convergence of forms, E-mail and [electronic data interchange], where you don't have to worry about what the actual message is and whether it's structured or unstructured," said Nina Burns, president of Creative Networks, Inc. in Palo Alto, Calif.

For instance, people can pick attributes to sort and prioritize their messages or slice and dice views on the mail in their mailbox. This is similar to the viewing methods used in Lotus Development Corp.'s Notes, Lee said.

Also, Banyan's model allows applications that are mail-aware, such as a forms-routing application, to share access to messages without conflict. Currently, it is difficult for applications such as workflow and forms to share message and address directory information, so most do not do so.

Additionally, Banyan updated the BeyondMail messaging client to natively use the Intelligent Messaging engine and the StreetTalk directory service. It also upgraded BeyondMail for Vines features to equal the Novell Message Handling System version. BeyondMail Version 2.0 includes rules languages for building workflow applications, imaging capabilities and forms development tools.

Looks promising

For FHP HealthCare, Inc., a managed health care organization in Fountain Valley, Calif., the BeyondMail/Intelligent Messaging combination will be the basis for an application that automatically routes trouble tickets from the company's help desk to the appropriate people, according to information systems specialist Brian Ledsworth.

"We want to send the forms not just as an attachment but as a piece of data that we can process at the other end," Ledsworth said.

Although FHP HealthCare has not built the application yet, the combination of the object store technology in Intelligent Messaging and the forms and rules in BeyondMail looks promising, he added.

Intelligent features

The following are features of Banyan's Intelligent Messaging III:

- **Object message store:** A single container for multiple mail-based and mail-enabled application objects.
- **Object database:** With a "dynamic envelope" feature, applications can create and manage their own electronic envelope of information containing transport directions without interfering with other applications in the same user's mailbox. This allows applications developers to build specific data types, which can be used by other applications.
- **Advanced query support:** Messaging clients can build simple or compound queries.
- **Different viewing methods:** Messaging applications can request a list of messages in a database folder sorted by the value of an envelope field. The same data can be viewed in different ways.
- **Shared mailboxes:** Many users can access a single mailbox. Intelligent messaging has controls.
- **MAPI 1.0 support:** Messaging Application Programming Interface (MAPI) clients, including a free client that will be bundled with Windows 4.0, can access Intelligent Messaging services.
- **Performance enhancements:** Servers can support more message traffic. Query and sort speeds are improved.
- **Management capabilities:** Alerts signal the manager for various events. Also, the server can be monitored or queried from Simple Network Management Protocol stations.

—Lynda Radosevich

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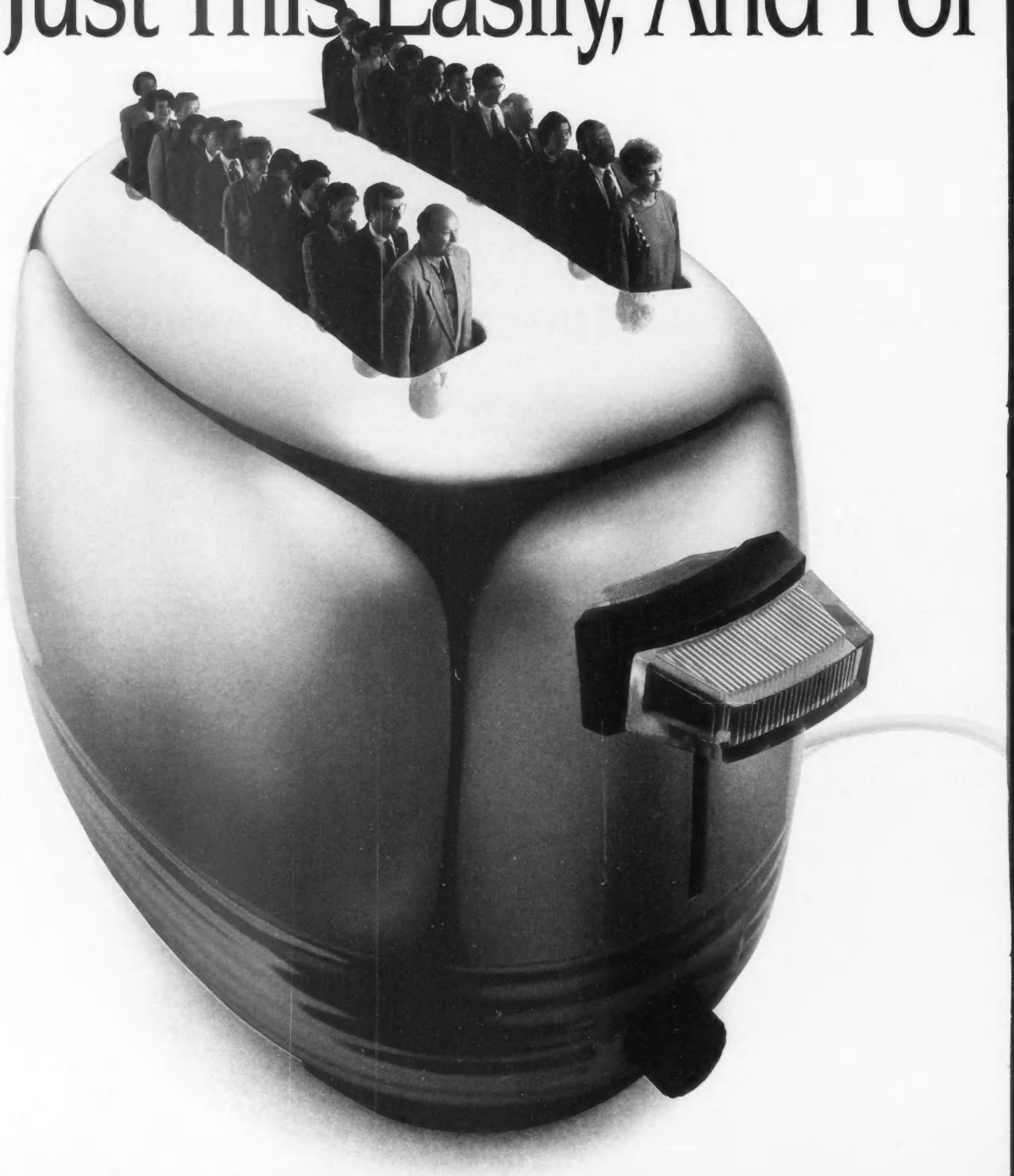

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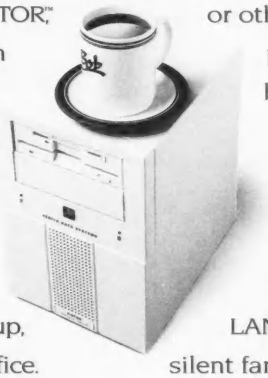

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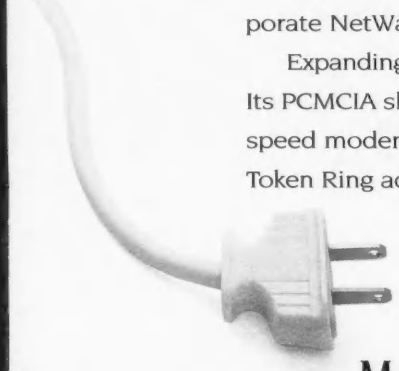

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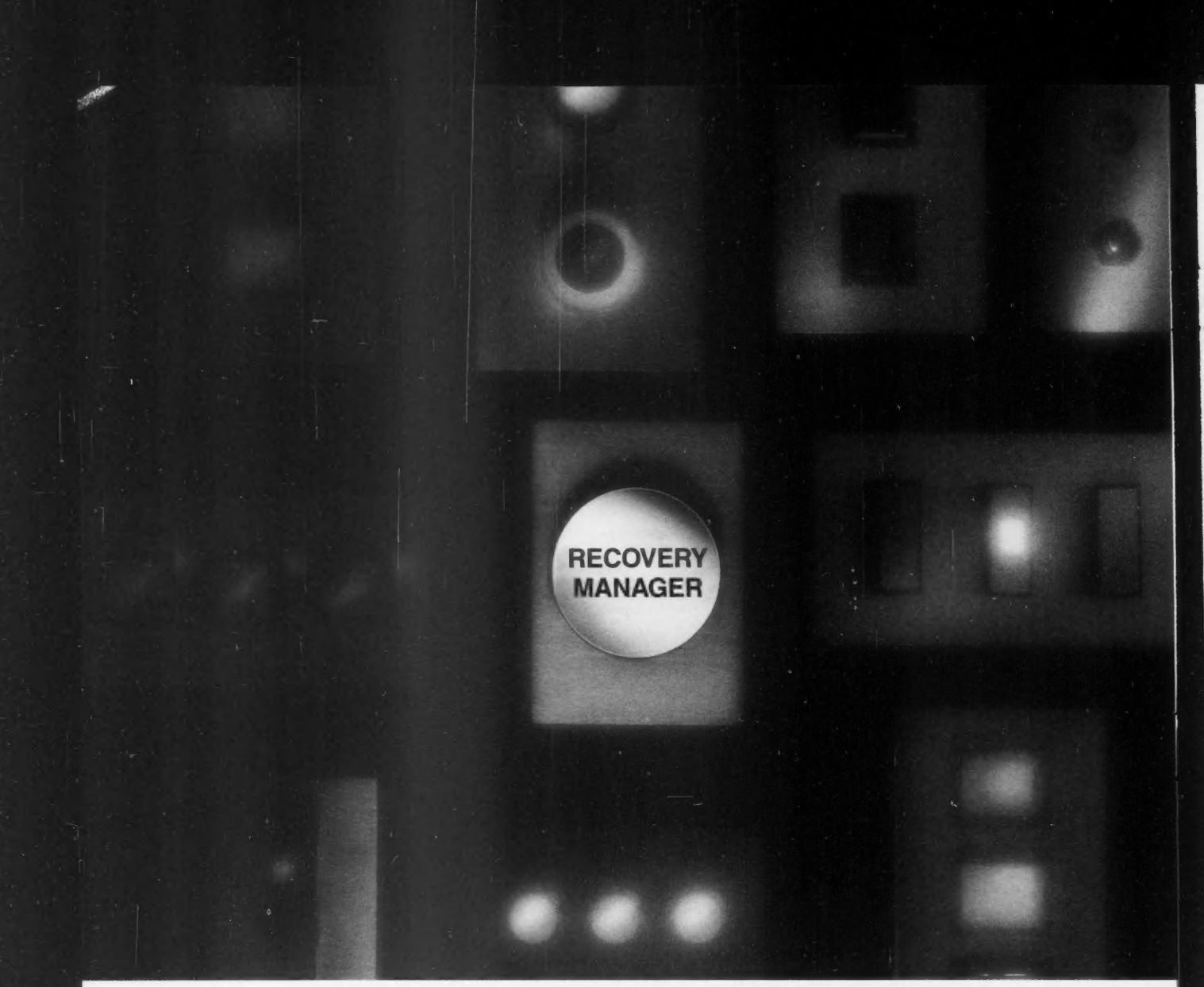

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Is the OSF's DCE ready for the big time?

By Jean S. Bozman

The Open Software Foundation's (OSF) Distributed Computing Environment (DCE) is being readied for prime-time production applications at some leading-edge sites, and DCE development is gathering steam. But industry analysts and early users predict DCE will not be widely used until 1996, in part because of concerns about its scalability and lack of strong systems management tools.

DCE offers users a way to forge a single client/server computing environment for different types of Unix computers, PCs and mainframes. (For a more detailed explanation of DCE, see the chart below.) Without DCE, users have had to cobble together software modules from different sources — and write some of their own code — to get the job done.

Much of DCE's potential is still bottled up in prototype networks and DCE test beds at corporate and university sites, users and analysts said. The actual number of production DCE sites is still small — fewer than 100 worldwide, according to some estimates.

But a second wave, with hundreds more production sites, is expected in the next 12 months. Among those most ready to "install" DCE cells are Wells Fargo Bank in San Francisco, Mead Data Central in Dayton, Ohio, and Goldman, Sachs & Co. in New York.

In fact, users at some sites said they cannot wait for vendors to adopt all facets of DCE code. For example, Stanford University has had a client/server distributed network in place for three years, accomplished by piecing together its own DCE equivalents (see related story page 75).

Still, the concept behind DCE is a powerful one, particularly in an era of global competition. "The notion of the network vs. the local cell disappears completely," said Kevin P. Tyson, a consultant working on a DCE project at Goldman, Sachs, an investment house in New York. "There is no difference between accessing the server on your local workstation or on the other side of the world."

Multiple server access

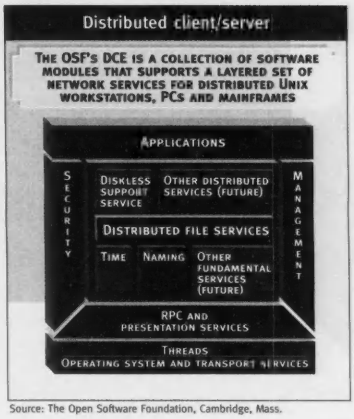
The advantage of using DCE is that, with one user logon, any client can reach any DCE server, regardless of the databases or operating systems used on each server machine. At Lehman Brothers in New York, business units are sponsoring a DCE effort that will allow them to launch financial applications across Unix workstations and PCs. Mead plans to use DCE to support systems management applications linked to a Hewlett-Packard Co. OpenView network manager, users there said.

"It's still more the leading-edge people and the experimenters in the organization," said Richard Villars, director of network architecture research at International Data Corp. in Framingham, Mass. But current development will spur production DCE cells in the future. He added it will probably be two years before massive DCE deployment occurs.

DCE, *page 75*

Glossary

- **Distributed Time Services:** Synchronizes the global "time" throughout the DCE network, updating security and audit functions through time stamps.
- **Cell Directory Service:** Provides a directory on one or more DCE servers that lists all network resources and data files available to clients.
- **Global Directory Service:** A broader listing of all network services and data files scattered throughout multiple DCE cells. Cells, which are groupings of DCE clients and DCE servers, are connected by private network links or by the Internet. Some users said they will employ the X.500 standard for file naming.
- **Remote Procedure Call (RPC):** A protocol that links all DCE clients to DCE servers. It is independent of proprietary RPCs used by relational database management products.



Source: The Open Software Foundation, Cambridge, Mass.

- **Distributed File Services (DFS):** A successor to the widely used Andrew File System (AFS) developed at Carnegie Mellon University to support distributed computing. Transarc Corp. will provide an AFS-to-DFS migration kit in the third quarter.
- **Security Service:** Based on Kerberos, a security program developed at MIT, this watchdog provides authentication of all approved users.
- **Threads:** Based on the threads interface in the Posix standard, each thread supports a single data flow within a program.

Brokerage replaces DASD storage with disk arrays

By Thomas Hoffman

Prompted in part by its recent decision to "insource" key operations like money market funds processing, Edward D. Jones & Co. has achieved early benefits from replacing its mainframe direct-access storage devices (DASD) with smaller and nimbler disk-array subsystems, according to company executives.

Jones, a Maryland Heights, Mo., brokerage, replaced IBM and Hitachi Data Systems Corp. DASDs offering 120G bytes of storage capacity with a 180G-byte EMC Corp. disk-array subsystem for its IBM 3090 600J mainframe computer in January. The EMC Symmetrix 5500 disk-array subsystem, a 17-sq.-ft. refrigerator-size unit, occupies one-fifth the floor space that Jones' DASDs required.

More importantly, there is room to grow within the EMC cabinet. The new disk-array subsystem, now running at 50% capacity, has increased Jones' data storage capacity to 400G bytes, according to Rich Malone, principal responsible for the firm's information services division.

Untapped resources

The brokerage therefore has plenty of untapped capacity as it keeps reining in operations that support its 2,900 branches. For example, Jones' money market funds processing had been outsourced to third-party vendors such as Automatic Data Processing, Inc. Jones is bringing those tasks back in-house during the course of this year.

"We're going to take over most of those [outsourced] functions, and the Symmetrix machine is going to help get us there since it's more efficient to do this processing on-line than in batch mode," Malone said.

Rich L. Malone: *Symmetrix array will facilitate 'insourcing'*

Furthermore, the EMC disk-array subsystem helped the brokerage be more responsive to customers during the past month, in spite of frenzied stock market activity. For example, the brokerage broke a company record last month when it processed 6.5 million IBM CICS transactions in a single day when the stock markets were on a particularly wild ride.

Compared with the former DASD machines, the disk-array subsystem has knocked nearly half a second off the company's data response time, thanks to improved I/O capabilities, Malone said. In a setting where a million dollars can be won or lost each second, I/O performance is critical. "I'm convinced that [the disk-array subsystem] helped us during those high-volume days," he said.

Industry analysts said customers who have switched from DASD to faster disk arrays achieved performance gains of up to 30%. "People who have replaced IBM DASD with EMC subsystems are getting better response times, and IBM can't quite compete with them at the very high end," said Robert Callery, a storage analyst at International Data Corp. in Framingham, Mass.

Even though IBM is expected to unveil RAID Level 5 products next month and in October, Callery said the systems will continue to fall short of EMC's performance capabilities.

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Is DCE ready for the big time?

CONTINUED FROM PAGE 73

Scott Winkler, a Unix analyst at Gartner Group, Inc. in Stamford, Conn., agreed. "At minimum, it's 24 months before the average organization is developing with it," Winkler said. The recent revamp of the OSF has also called DCE's future into question for some users [CW, March 28].

But the OSF has said DCE development is still going strong, and it will ship DCE 1.1 — now in beta testing — in November. At that point, the OSF will hand over DCE development to a task force of OSF vendor members likely to include IBM and HP.

"It does not appear that it will get derailed," Winkler said, "but it could be a slow burn." Analysts have some questions about the mechanics of which vendor will handle which pieces of DCE development once the transfer occurs.

Not a holdup

Nevertheless, users implementing DCE do not appear to be letting that slow them down. To date, most of the leading-edge DCE sites have started their projects with a small task force, often a team of just three to five people, and have usually tapped independent consultants for their DCE expertise. Most built test bed DCE "cells" with 10 to 30 workstations and PCs to prove the concept to corporate business units that were funding the DCE work.

During the prototype phase, users tested DCE scalability and the interconnection of multiple cells. The next step was production, as typified by San Francisco investment house Charles Schwab & Co., which installed a DCE cell of Unix workstations, PCs and mainframe links in Phoenix [CW, Dec. 6, 1993]. If the first DCE cell works well, more will be installed nationwide at Schwab's regional sales offices, users in Phoenix said.

Doubts remain

Despite the optimism, some concerns about DCE — including its scalability and the lack of industrial-strength systems management tools — may hamper its widespread adoption. Although DCE can theoretically handle networks of thousands of computers, some users worry about doing so.

"You have to be able to know what's going on," said Art Gaylord, director of Project Pilgrim at the University of Massachusetts at Amherst, which is developing DCE networks for campuswide use. "Until you get good instrumentation, it's like trying to drive your car with your eyes closed." Other users are awaiting wider support for Microsoft and Novell, Inc. PC LANs.

David Lounsbury, director of the OSF's distributed environment engineering group, said some of those services will be included with DCE 1.1. Among them: a new DCE Control program to manage all DCE core services and a DCE Cell Manager that was demonstrated at UniForum in late March.

The unknown

Still, DCE is an unknown quantity to most users who will evaluate it in 1994 and 1995. "It's on everybody's to-do list, but we find that a very small number of users are able to articulate what it will do for them," Winkler said. "They're not sure what it is and what it's going to do to help them."

But for some users trying to adopt networking without boundaries, DCE is proving its worth.

"The great advantage of DCE is [it's] not only an infrastructure for Unix, it's an infrastructure for any operating system, mainframes included," said Serban Grecenau, a DCE consultant at Lehman Brothers. The firm has mainframes, approximately 4,000 Unix workstations and 4,000 PCs.

"That makes it more attractive to everybody," Grecenau said.

Not for Unix only

Although DCE started on Unix machines, users expect its value to be in linking up a heterogeneous computer network. IBM began shipping its MVS-compatible DCE package in April, and a VM version is in the works. PC support is still limited, but Gradient Technologies, Inc. ships a package for Windows. So far, mainframes and PCs are being used as DCE clients only. However, Digital Equipment Corp. is preparing a full DCE port for Microsoft's Windows NT, which would allow NT to be a DCE server. It is due later this year.

OLTP added

Last year, users developing DCE applications worked on getting the core DCE services up and running reliably. This year, as early DCE production applications roll out, users are adding on-line transaction processing (OLTP) software to the mix.

Without OLTP, a lot of DCE computing would revolve around decision support and data access — and not much more. Adding OLTP functions to the DCE core services eases the migration of transaction-oriented mainframe applications to client/server systems. But it also brings headaches, such as worries of forcing too much data traffic onto the corporate network.

There are several ways to "layer" OLTP functionality on top of the basic software strata of DCE services. Transarc Corp.'s Encina is the leading example. Transarc has already linked DCE's core services to the Encina OLTP monitor and Encina file services.

Encina was also the basis for IBM's CICS/6000 and HP's HP Encina/9000 client/server OLTP products. Tandem Computers, Inc., which will support CICS, DCE and Novell's Tuxedo OLTP monitor, has focused on "delegated commits," which allow client requests to trigger server transactions.

—Jean S. Bozman

Migration inevitable for Stanford

Stanford University crafted its networked computing environment three years ago without using DCE software. Its distributed network is based on the Andrew File System (AFS) from Carnegie Mellon University and Sun Microsystems, Inc.'s Network File System, along with some custom software.

The campus has more than 2,000 Unix workstations acting as peers — and 19,000 user identifications, because people share computers. "Anyone on campus who has AFS installed can access their files from anywhere in the world," said Roland Schemers, a systems programmer in Stanford's distributed computing operations group. But first, AFS 3.2's Kerberos security program authenticates all user IDs before allowing access to the distributed data servers.

The reluctance to install DCE stems from a lack of broad DCE support for PC LANs, said Raman Khanna, director of networking and distributed computing. "If I had to maintain a Unix-only environment, I would go to DCE real fast," he said. "But there's no current buy-in from the Microsofts and Novells and Apples of the world." Khanna said the campus also has 10,000 Macintosh machines and about 5,000 IBM-compatible PCs.

Stanford paid a price in its quest to enter the world of distributed computing in the early 1990s. "Basically, we're writing our own homegrown software," Schemers said, using the C language and the "Perl" scripting language.

But a migration to DCE is practically inevitable starting in 1995, Khanna said. The first step will be to replace the Internet's Domain Naming Services for the DCE cell directory and DCE global directory, using the X.500 standard for naming files. The second step will be to migrate from AFS to DCE's Distributed File Services.

"We've been able to create an environment for a subset of our community," Khanna said, "and we'd really like to migrate all of Stanford, including administrative computing, to a distributed computing environment."

—Jean S. Bozman

Briefs

Recovery for Tandem

Comdisco Disaster Recovery Services said it has expanded its ability to recover Tandem Computers, Inc. computers by increasing the number of Tandem machines at its Wood Dale, Ill., facility.

IBM unveils storage

IBM took the wraps off high-end storage devices for its RS/6000 customers. Based on RAID 5, the 3514 Models 212 and 213 include a 1G- or 2G-byte drive priced starting at $3.40 per megabyte.

EMC backs up AS/400s

EMC Corp. has introduced storage devices for IBM AS/400 machines. The Voyager 3490 E series provides up to 48G bytes of backup capacity. EMC also said its Harmonix Integrated Cached Disk Array will support RAID 0, 1 and 5.

AT&T, Red Brick team

AT&T Global Information Solutions (formerly NCR Corp.) and **Red Brick Systems** are jointly marketing Red Brick's data warehousing software.

ASK takes Q3 hit

The ASK Group, Inc. posted a $69 million loss for its fiscal third quarter 1994, due in part to a $45 million restructuring charge, the company said. The database and applications maker reported $87 million in sales for the period, compared with $82 million in the same period last year. More than 400 workers have been laid off since Jan. 1. ASK plans to trim 100 more people by July through layoffs and attrition, a spokeswoman said.

IBM signs contract

System Software Associates, Inc. and **IBM** signed a development and marketing agreement last week that focuses on System Software Associates' software for the IBM AS/400 and RS/6000 platforms. Among other components, the agreement will include marketing campaigns for specific market segments.

D&B, PeopleSoft battle in human resources arena

By Rosemary Cafasso

The client/server human resources applications market is about to get more contentious now that Dun & Bradstreet Software has made its official entry, and market leader PeopleSoft, Inc. is not about to give an inch.

D&B Software, one of the leading providers of human resources software for the mainframe world, has targeted the client/server human resources applications market for more than two years. Last week, it launched HR Stream Release 1.0, expected to ship in June.

The software includes basic human resources functions and built-in workflow software to help automate processes. It was also designed with an enterprise model blueprint of human resources information intended to help customers design or redesign their human resources function.

Meanwhile, PeopleSoft rolled out HRMS 4 on the same day of D&B Software's launch. The Walnut Creek, Calif., company built an installed base of approximately 300 customers while D&B Software and other host-based suppliers were still developing their products.

The new PeopleSoft software, scheduled for delivery in July, includes additional human resources functions such as training administration, succession planning and Consolidated Omnibus Budget Reconciliation Act administration.

In addition, Oracle Corp. recently announced client/server versions of its human resources software. Oracle ranked third in the client/server human resources market with approximately $10 million in 1993 revenue, according to a recent International Data Corp. (IDC) survey.

Market leader

PeopleSoft leads the client/sever human resources software market with about $30 million in 1993 revenue and a 33% market share, IDC said.

Observers said the companies are shoring up their installed bases. For D&B Software, that means helping to migrate host-based users to the new platform. For PeopleSoft, it means catering to customers who already switched to a client/server setup.

"PeopleSoft has some lead time before Dun & Bradstreet becomes a direct threat," said Claire Gillan, director of applications research at IDC. Further, she said D&B Software "will still need to prove themselves. They really only have two beta sites."

Fierce competition

D&B Software's HR Stream, which the company said was built from the ground up, was designed to work with the Sybase, Inc. database management system. It includes several modules that address key aspects of the human resources process, including a base human resources management component as well as recruitment, employment, compensation and training and government compliance modules.

Ralph Horner, director of the human resources information systems project at Weyerhaeuser Co. in Tacoma, Wash., said he has been an early test customer for D&B Software since late 1992. He said he has given the company a large amount of feedback and believes it added some functions based on his input.

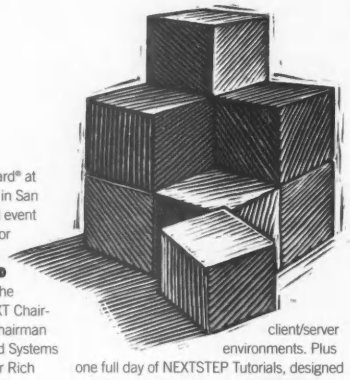
"For us, it really did fit our needs," Horner said. "It's flexible enough that you can almost pick and choose the modules."

HR Stream includes workflow technology that allows customers to create a human resources process with automated routing and messaging.

Bobby Cameron, a senior analyst at Forrester Research, Inc. in Cambridge, Mass., said if D&B Software has an advantage over PeopleSoft, it stems from its workflow design, which was built as a core component of its human resources platform.

PeopleSoft, on the other hand, is now trying to incorporate similar technology into an existing product line.

THE SUBJECT IS OBJECTS.



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New Products

EMC Corp. has announced the Voyager 3490 E series, storage products for the IBM AS/400.

According to the Hopkinton, Mass., company, the series provides high-capacity 36-tape backup for Models 9404 and 9406 of the AS/400.

The company also offers the SL6 series direct-access storage device (DASD), which provides high-performance disk storage for 9404 AS/400 users.

The Voyager 3490 E series combines unattended backup capabilities with high transfer rates that enable users to manage growing data volumes and shrinking backup windows.

The SL6 series DASD lets 9404 AS/400 users increase their system and expansion unit capacity by providing users with 400M bytes to 3.92G bytes of permanent storage on 3½-in. disks.

Voyager E series prices range from $35,225 to $64,250; the SL6 series DASD ranges from $2,500 to $6,100.

▶ *EMC*
(508) 435-1000

Generic Software, Inc. has introduced Deskworks Release 4.2, an interactive spreadsheet program for IBM's AS/400.

According to the Madison, Miss., company, enhancements for the product include a Retrieve Data from External Lotus Cell function that returns the value of a cell or range in a Lotus worksheet file that is contained in an AS/400 shared folder.

The Retrieve Data from External Cell function now supports referencing a range in an external spreadsheet and as a single cell.

The Return Cell Attribute, Relative Cell Value, Indirect Cell Value and Table Lookup functions have been enhanced to support external references.

Deskworks Release 4.2 costs $695.

▶ *Generic Software*
(601) 853-1189

Transition Engineering, Inc. has introduced the PowerStar III active UTP Repeater for S/3X and IBM AS/400 environments.

According to the Eden Prairie, Minn., firm, the PowerStar III offers a cost-effective method to convert twin-axial daisy chain networks to a low-cost unshielded twisted-pair, star-wired configuration.

The PowerStar III is available in either one-host/seven-device or two-host/14-device configurations. Host/device connections are provided through either RJ-11 or RJ-45 connectors.

The PowerStar III costs $600 for a single-host/seven-device unit and $1,200 for a two-host/14-device unit.

▶ *Transition Engineering*
(612) 941-7600

FlexiWare Corp. has announced that its FlexiFinancials client/server financial application system is interoperable at code-specific levels with Sybase, Inc.'s SQL Server 10 relational database management system.

According to the Shelton, Conn., company, the combination of FlexiFinancials and the SQL Server 10 enterprise features high on-line transaction processing rates; complete data integrity and disk mirroring backup; transparent read/write access to any network-connected data source; access to a variety of popular desktop and server hardware and software systems; and large user population support.

FlexiFinancials is available in FlexiLedger and FlexiPayable modules with prices ranging from $50,000 to $100,000 per module.

▶ *FlexiWare*
(203) 925-3040

Software Engineering of America has introduced the Tape2000 Release 4.2, an automated tape library management system for MVS, MVS/XA and MVS/ESA environments.

According to the Franklin Square, N.Y., company, Tape2000 features full retention control, real-time access through ISPF for on-line tracking and management, scratch protection/verification, off-site vault management, full security, multiple-system/parallel processing support, multifile/multivolume support and tape silo support.

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OTHER PROFESSIONAL MANAGEMENT

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90. Other Titled Personnel

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(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
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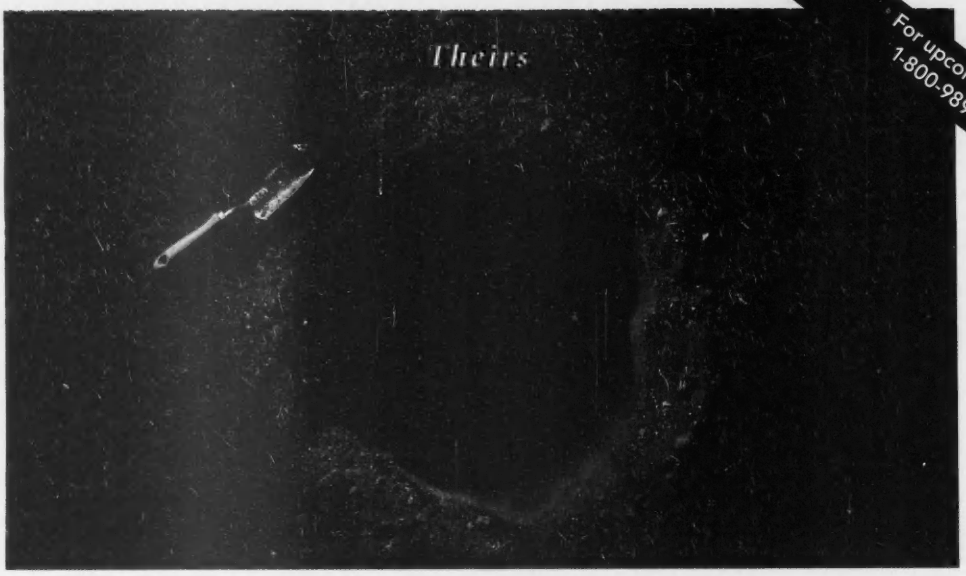

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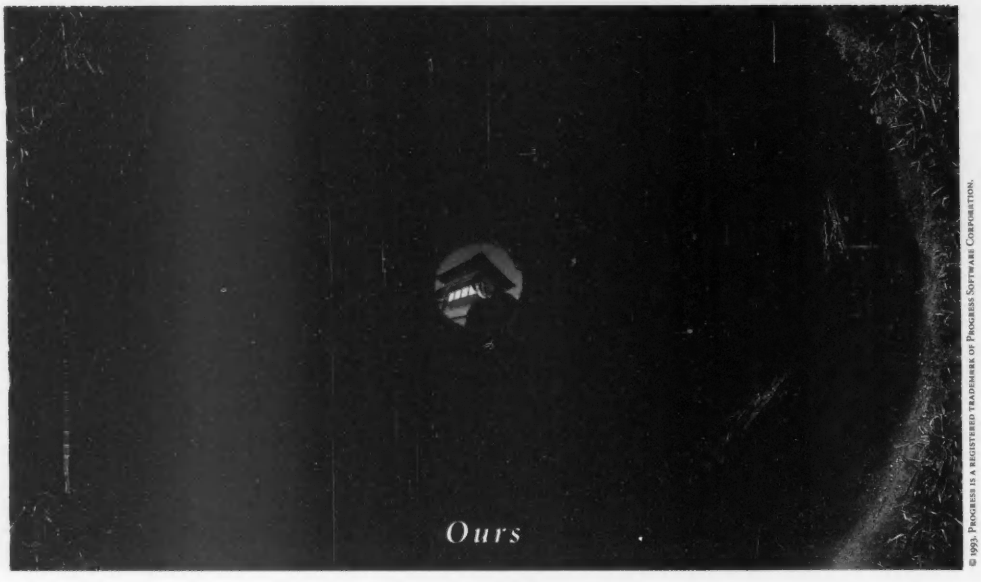

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PROGRESS
SOFTWARE

Rush is on for plug-and-play leadership

Common code base will let users choose modules to run applications over varied operating systems

By William Brandel

PC software vendors are rushing to implement componentized, building block architectures that should help users port code more quickly and run applications across different types of desktop machines.

While plug and play has been around the PC hardware industry for a while, the notion of breaking up software applications into components and gluing them back together using object-oriented tools is relatively new to the PC software industry.

Users welcomed these efforts. "We definitely will look at these next-level applications, but of course this all depends on how well the vendors implement these frameworks. Being able to pick and choose pieces of an application makes sense for the users," said Lee Allen, manager of decision-support systems at Schering-Plough Corp. in Union, N.J.

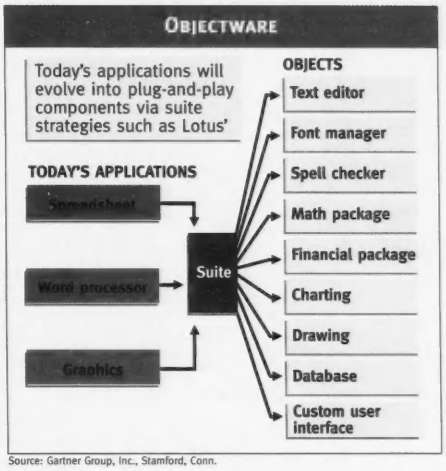
The pending arrival of new object-oriented software and tools — for example, Component Integration Laboratories' OpenDoc and Microsoft Corp.'s Object Linking and Embedding (OLE) 2.0 and Windows 4.0 (also known as Chicago) — will help vendors achieve this goal. Nearly all major software developers, including Lotus Development Corp., Microsoft and WordPerfect Corp., have incorporated this idea or plan to do so soon.

Vendor offerings

"All the major software vendors will be offering plug-and-play applications by the end of this year," said Bob Flanagan, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H. To do so, vendors will adopt a common, portable code base that will be included in upcoming versions of their software application suites.

This common code base for suites such as Microsoft's Office or Lotus' SmartSuite will become the engine for the suites' application execution, Flanagan said. The common code will sit atop a layer of middleware, which will enable this engine to run over different operating systems.

This interpretation of plug and play is already in place in WordPerfect's Office messaging system. By using the same code base, the application runs over Windows, DOS and Unix, WordPerfect officials said.



Source: Gartner Group, Inc., Stamford, Conn.

Lotus recently unveiled a new architecture for its next-generation applications. By pooling all the base application functions into a common code base, SmartSuite programs such as Lotus' 1-2-3 spreadsheet or its Ami Pro word processor can be plugged in as feature sets for the user, said Alex Morrow, general manager of cross-platform architecture at Lotus.

"Think of it as an iceberg with the user seeing only the top 20% of the triangle," Morrow said. "But underneath, the application code has been chopped into little pieces. Those pieces are objects, the remaining 80% of the application that make up the common code."

More features

Lotus' common code set, which will roll out in different applications, will be based on a 32-bit architecture and will take advantage of features like multithreading, multitasking and preemption.

Because the lower-level code in Microsoft's Windows 4.0 will include these same attributes, Lotus developers only have to build extensions into their OS/2 common code for it to run over Windows 4.0, Lotus officials said.

Using this 32-bit, cross-platform code base, Lotus said it will deliver the same feature set found in OS/2 and Windows 4.0 and still offer a consistent user interface and file formats across the different platforms.

Microsoft has already made its move toward common application features and user interface in its Office suite, said Robbie Bach, program director at Microsoft. Using Microsoft's Visual Basic macro language or OLE, application components such as spreadsheet cells can be called up by another application, such as Microsoft Word, Bach said.

These new architectures will let users customize vendors' applications and integrate their own in-house-built components, or those from other vendors, into the applications. While not many general applications on the market support OLE 2.0, Chicago or OpenDoc, WordPerfect said it will deliver OLE 2.0-compliant applications beginning this summer.

Client/server tools

Intersolv expands into desktop arena with Q+E purchase

By Melinda-Carol Ballou

■ Client/server tools vendor Intersolv, Inc. extended the reach of its product line into the desktop reporting and database access arena late last month when it acquired Q+E Software.

Under terms of the agreement, Intersolv purchased Q+E Software for about $36 million, comprising $5.3 million in cash and 2.6 million shares of Intersolv stock.

Corporate information systems managers familiar with products from both companies applauded the merger.

"The advantage I see here is that of synergy between the two. This will make Intersolv into a $100 million company and give them more market presence on the desktop and will put significant backing behind Q+E" at the same time, said Lee Scalzott, vice president of applications software development at Cable & Wireless, Inc., a Vienna, Va., telecommunications company.

"It's a win-win situation for both companies," said Britt Mayo, director of information technology at Pennzoil Co., a Houston-based petrochemical company and a user of Q+E Software products. "It makes Intersolv a stronger company, gives them a broader range of tools and gives Q+E leverage with financial and other resources."

Reorganizing efforts

As a result of the agreement, product development at Q+E Software will remain a separate division under Intersolv, but the sales and marketing arm of the company will merge with Intersolv's.

The Q+E product line will also be integrated with Intersolv tools, such as PVCS configuration management tools and APS and Excelerator II application development products, to offer a similar look and feel across the entire product line.

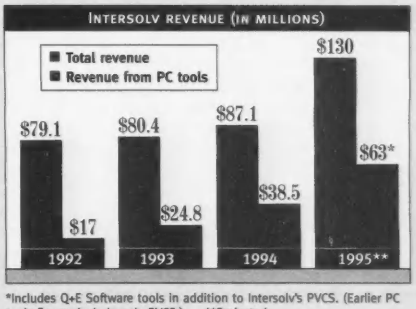
Both Mayo and Scalzott said they are interested in checking out the combined products as they become available over the next 12 to 18 months.

Distribution for Q+E Software's tools has been handled largely through OEMs. For instance, Micro-

Intersolv, *page 87*

Gaining ground

Intersolv is becoming more multifaceted with the acquisition of Q+E Software. The company is likely to receive nearly half its revenue from PC tools by 1995, compared with its traditional base of high-end IS tools.



*Includes Q+E Software tools in addition to Intersolv's PVCS. (Earlier PC tools figures include only PVCS.) **Projected

Source: Volpe, Welty & Co., San Francisco

Shadow Direct integrates DB2 data

By Thomas Hoffman

Neon Systems, Inc., a Houston-based middleware developer, recently introduced a package that integrates IBM DB2 data with desktop packages such as Lotus Development Corp.'s 1-2-3, Powersoft Corp.'s PowerBuilder and Microsoft Corp.'s Excel.

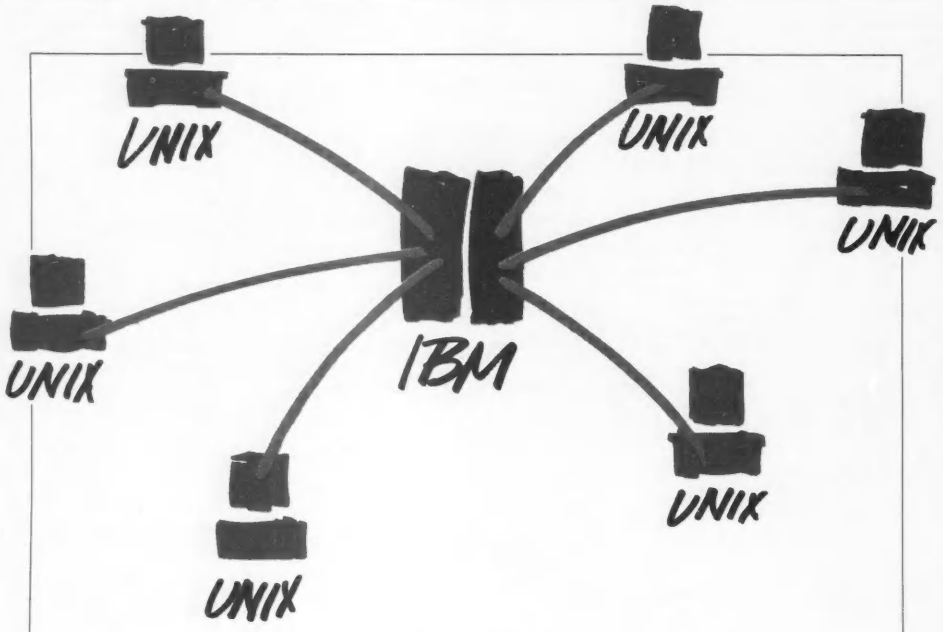
The package, called Shadow Direct, is compliant with Microsoft's Open Database Connectivity (ODBC) application programming interface. With Shadow Direct, a gateway product is not needed to integrate DB2 data with client desktop applications because the package resides on both the ODBC driver and an IBM MVS host component, according to Peter Schaeffer, Neon's director of technology.

Shadow Direct provides desktop users with direct access to a mainframe using a TCP/IP or LU6.2 link.

Texaco Corp. in Tulsa, Okla., a Shadow Direct user since December, has been using the software to download DB2 data to a PowerBuilder-based natural gas scheduling system, said Ron Garrison, an information systems supervisor at the petroleum firm.

Garrison said he was particularly impressed with Shadow Direct's Dynamic SQL capabilities. "This product has worked out very well for us," he said.

Shadow Direct, which supports all current releases of DB2, VTAM and TCP/IP, is available now. Pricing ranges from $10,000 to $50,000, depending on host processor size.



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Linking remote UNIX systems to IBM hosts can be a challenge. There are many issues to consider:

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- Do your UNIX systems serve or link to LANs? Are there SNA gateways for these LANs?
- Do you process interactively (3270, 5250), in batch (RJE), or both?
- Do you use program interfaces such as HLLAPI, CPI-C/APPC/LU6.2, and LUA/LU0?
- How do you manage your network? How do you distribute programs, files, and data to your remote UNIX systems?
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Briefs

OMG to map IDL

The **Object Management Group** (OMG) recently announced a request for information for common facilities and a request for proposals for Smalltalk Language Mapping for the group's Interface Definition Language (IDL). The original IDL was offered with mappings to C, and the OMG is currently specifying mappings for C++. The common facilities will provide document architecture services such as those offered by Microsoft Corp.'s Object Linking and Embedding.

Upgrade for AutoTester

AutoTester, Inc. announced a new version of its AutoTester for Windows 2.0 software testing tool. It will offer special drivers for automated testing of applications created with Powersoft Corp.'s PowerBuilder. The tool recognizes standard Windows objects and specialized PowerBuilder objects, such as the PowerBuilder Data Windows, company officials said. A separate collaboration with Gupta Corp. will let developers test Gupta SQLWindows applications with AutoTester.

MCI picks Versant

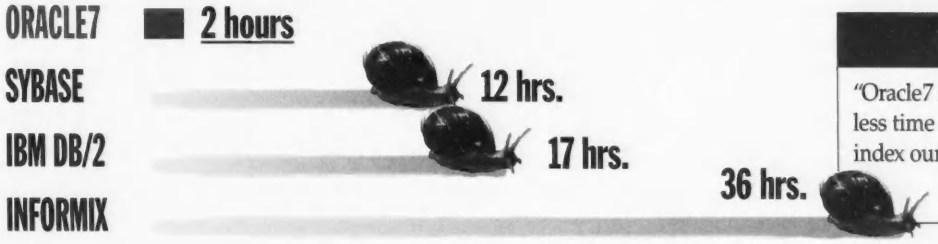
Versant Object Technology Corp. announced that **MCI Communications Corp.** elected Versant's Object Database Management System for an international network management application. An MCI team based in Colorado Springs is developing the application, which will be deployed at MCI's international network management center to handle functions such as event reporting.

Business Object for HP

Hewlett-Packard Co. has selected **Business Objects, Inc.'s** Business Object software as an information access component for HP's OpenWarehouse program, according to Business Objects officials. OpenWarehouse integrates third-party applications to create a data warehouse. Business Objects is an information access, analysis and reporting tool.

Gentlemen, start your snails.

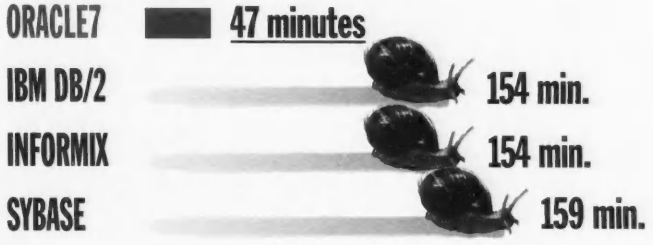
PC Magazine independently defined and ran a battery of real-world performance tests to compare database server software. PC Magazine states, "**Oracle7 was the hands down winner on our performance tests,** outperforming the others by a wide margin."



LOAD AND INDEX

"Oracle7 finished the entire test suite in less time than most took just to load and index our data."

PC Magazine



AD HOC QUERY

"Oracle7 completed the queries in a blistering 47 minutes, three times as fast as...the other products."

PC Magazine

CONCURRENT RANDOM WRITE

"Even with the many new features that were added, we found Oracle7 to be exceptionally stable"

PC Magazine

CONCURRENT RANDOM READ

"Oracle7's read-consistent model and record level locking helped it breeze through the test."

PC Magazine

Just to be fair, here's what PC Magazine had to say about the other guys:

Informix OnLine *"Only after days and days of repeated crashes were we able to obtain a full set of results."*

Ingres Server *"...we would not recommend it because of the showstopping multi-user bug we encountered."*

Gupta SQLBase *"...took an unthinkable 60 hours to load the tables and then crashed on the index builds..."*

For your copy of the complete PC Magazine article, including test results call 1-800-633-1071 Ext.8129.

ORACLE

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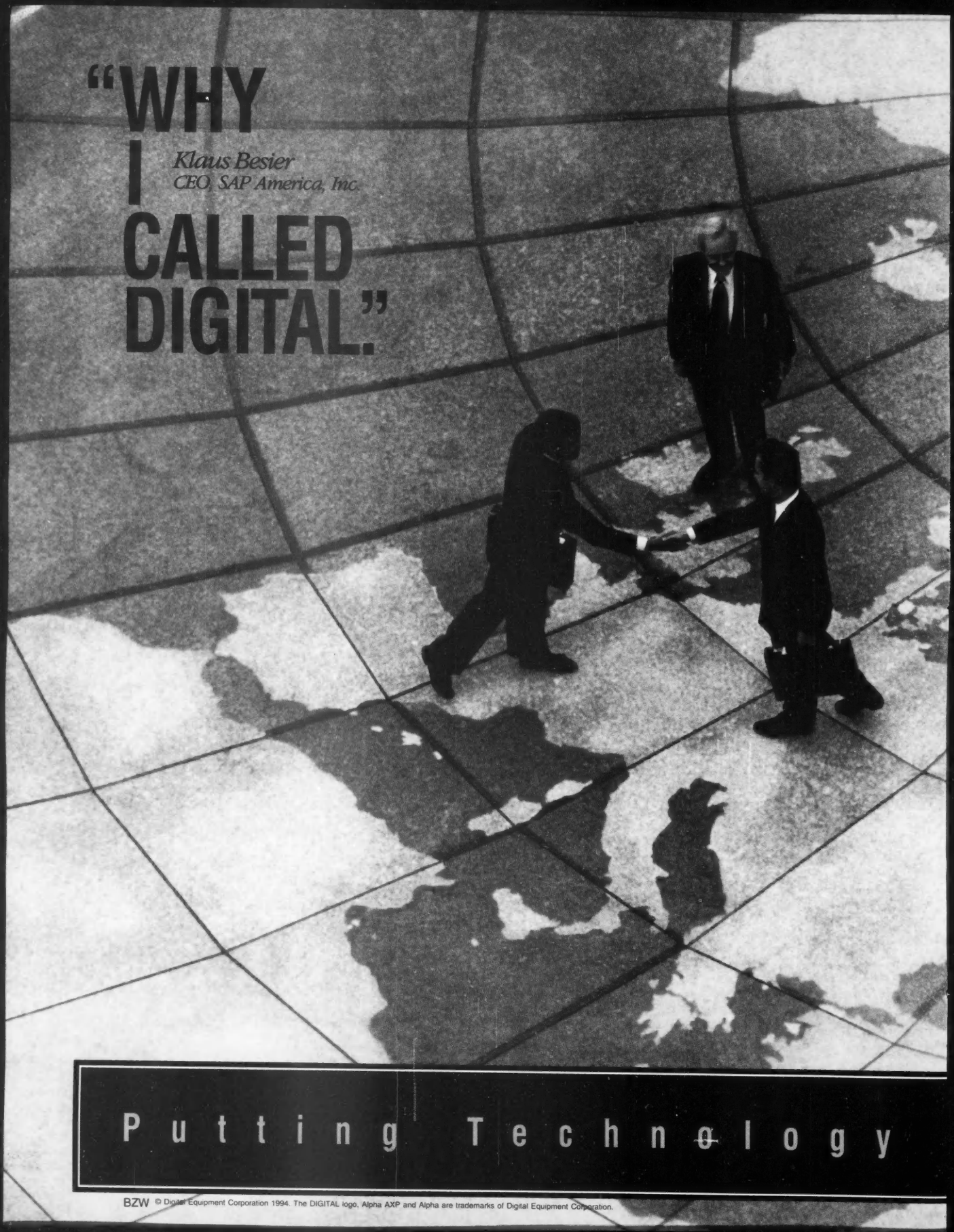

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Klaus Besier, CEO, SAP America, Teams Up With Digital's Alpha AXP.

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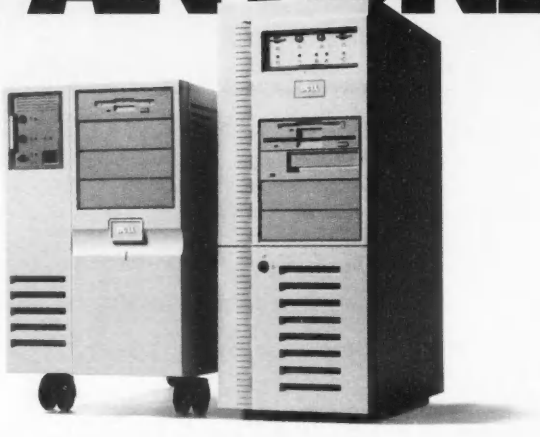

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New Products

Rogue Wave Software, Inc. has announced Heap.h++, a memory management library module.

According to the Corvallis, Ore., company, Heap.h++ can make C and C++ programs run faster and use less memory by relinking the program.

Heap.h++ features a high-level Heap object interface that allows user control of memory policy, adaptability to any Unix system and the return of unused memory to the operating system whenever possible.

Heap.h++ costs $995.

▶ *Rogue Wave Software*
(503) 754-3010

ParcPlace Systems, Inc. has introduced ObjectBuilder 2.5, a graphical user interface builder that allows C++ developers to encapsulate off-the-shelf, non-ObjectBuilder-based Xt building blocks and use them to construct a user interface for C++ based applications.

According to the Sunnyvale, Calif., company, ObjectBuilder 2.5 includes additional palettes, customizable and extensible editors and support for Motif 1.2.

The product is available for Sun Microsystems, Inc.'s SPARC systems running SunOS 4.1.x or Solaris 2.x, Hewlett-Packard Co.'s Series 9000/700-800 with HP/UX 9.x and IBM RS/6000 under AIX 3.x.

A single concurrent user license costs $4,500, and five-pack concurrent licenses are available for $18,750.

▶ *ParcPlace Systems*
(408) 481-9090

Sheridan Software Systems, Inc. has introduced Designer Widgets, a set of custom controls for Microsoft Corp.'s Visual Basic.

According to the Melville, N.Y., company, the product includes a Dockable Toolbar control that lets users create floating tool bars of buttons that the user can "dock" or attach to the top, sides or bottom of a Multiple Document Interface form. When not docked, the tool bar can be reshaped or resized. Users can also create index tabs that let them design dialogs using the index tab metaphor to group collections of related options.

A FormFX control customizes forms by manipulating captions and borders. Users can include multiline text and pictures, and they can change the height, adjust the fonts and alignment or add a three-dimensional look.

Designer Widgets costs $129.

▶ *Sheridan Software Systems*
(516) 753-0985

Intersolv

CONTINUED FROM PAGE 81

soft Corp. shipped 4 million copies of Q+E Software's query product with its Excel spreadsheet during the past few years, according to Kevin Burns, president and chief executive officer at Intersolv.

Q+E had considered going public to gain revenue to strengthen distribution capabilities and focus resources on research and development. But company officials ultimately chose to be acquired instead in order to expand distribution opportunities.

Who decides?

"Purchasing decisions are moving from individual departments up to information systems professionals as IS becomes more serious about client/server, and Q+E has had no distribution channels targeting those IS groups," said Ed Acly, an analyst at International Data Corp., a Framingham, Mass., consulting firm.

"This lets them tap into what Intersolv has and to sell to upscale developers," he said.

Other analysts agreed.

After this acquisition, Intersolv "will have a larger portion of revenue related to the PC tools business compared with their traditional MIS business," said Paul Bloom, an analyst at Volpe, Welty & Co., a San Francisco investment banking firm (see chart, page 81).

"They're trying to tap into all the hot markets because the world is changing. But this is an intelligent acquisition and a good addition for them since it doesn't compete with other major vendors," Bloom added.

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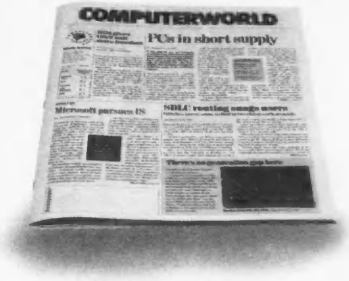

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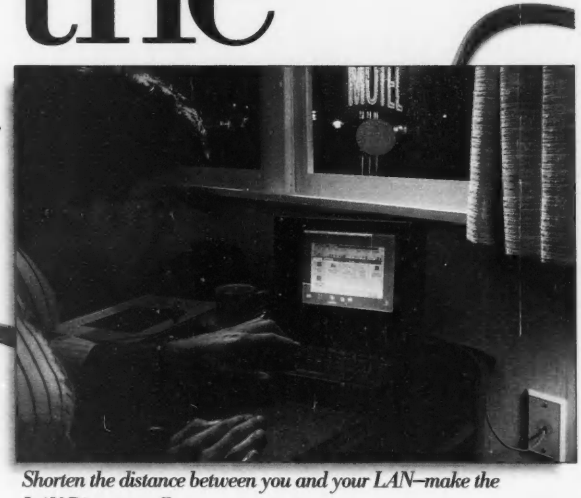

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Remote to Remote	Yes	No	No	No
LAN to Remote	Yes	No	No	Yes
LAN to LAN	Yes	No	No	Yes
Remote Connectivity Sync, ISDN, X.25 (In addition to ASYNC)	Yes	No	No	Yes
LAN Application Interfaces NetBIOS, NetBEUI, 802.2 (In addition to IP and IPX)	Yes	Yes	Yes	No
Security WS Addr., Sec. Admin., Logon Policies, Logon Day/Time (In addition to User ID, Password and Callback)	Yes	No	No	No

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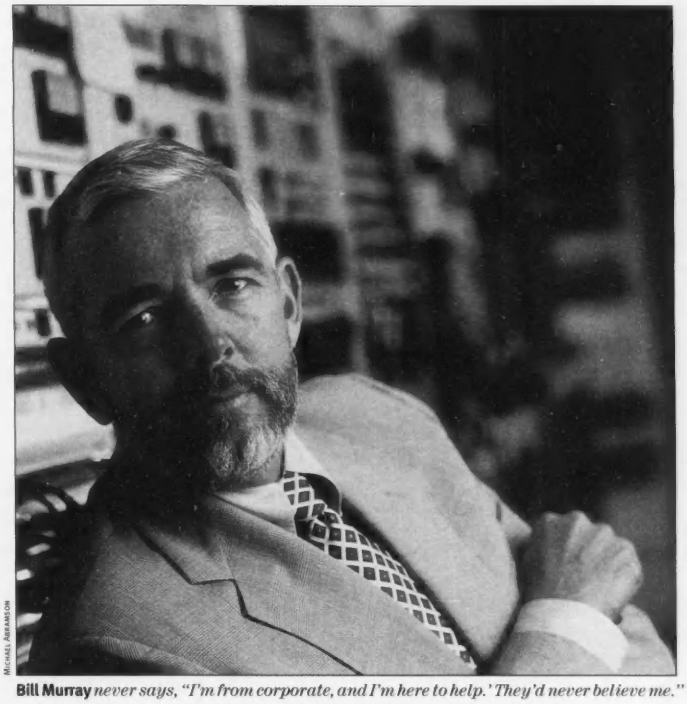

MICHAEL ABRAMSON

Bill Murray *never says, "I'm from corporate, and I'm here to help.' They'd never believe me."*

POLITICAL MANEUVERS

ALL technology is political, and the key to a successful campaign is winning allies in influential places

BY JULIA KING

Bill Murray knows the secret of any successful political campaign — target your supporters carefully, get out and meet the voters face to face and speak to them in simple terms.

So when Murray wanted to sell the merits of a single enterprisewide communications system for the *Chicago Tribune*-owned television and radio stations, he made a point of sitting down with the top brass at each station one by one.

The new system would track how many times each episode of a TV series has aired and thereby how much the station could charge for commercial time. It would reach each and every local workstation via a LAN.

To explain his vision to each general manager, Murray reaches for his colored markers and the nearest napkin. A few minutes later he reduces plans for the complex network to a few colored lines and circles. Response is quick and favorable.

It's an unusual approach for selling the business merits of a complex information system, but Murray knows he has only a few minutes to win the voters' trust and support, and the simple approach is often the best.

Selling strategic IS projects such as this one is a big part of the chief information officer's job. It's also very tricky. To do it successfully, you need technology allies in the executive suite and in the user ranks.

As director of information services at Tribune Broadcasting Corp., Murray must know how to win those allies and sell his plan to highly skeptical and fiercely independent general managers. But ask Murray how he campaigns, and he'll first tell you how he doesn't.

"I never go in and say, 'I'm from corporate, and I'm here to help.' They'd never believe me," he says.

Instead, Murray draws his pictures. He first illustrates their current system architecture of six stand-alone applications. He then draws a single line to represent the same applications, plus a new

Maneuvers, *page 92*

Maneuvers

CONTINUED FROM PAGE 91

program management system he wants the TV stations to implement.

After that, Murray offers to pay for most but not all of the project costs.

"When they see that on paper, they think it's almost too good to be true," says Murray, whose infrastructure-building strategy is to seed LAN-based systems where now there are no LANs.

IS general manager Pauline Nornholm at Douglas Aircraft Co. in Long Beach, Calif., estimates that between 80% and 90% of her job is selling, and that often includes selling to her own IS organization.

"What we do is sell stations on the idea that IS will shoulder a lot of the up-front costs," he explains. What IS receives in return, he says, is a "tremendous start on a sophisticated enterprisewide network that adheres to company standards" and buy-in from previously recalcitrant business divisions.

Choosing a target

But who make the best campaign prospects, and how should they be approached?

Whether a particular project or advanced technology in general flies or falters almost always depends on the answers to those questions. As with any campaign, there are certain political ground rules. Three of the most important, managers say, are: Keep your message short and simple, know you'll need to compromise periodically, and choose one individual to act as the point person on each project.

"When one person becomes identified with a project, listeners develop an emotional attachment to that person," says John Glaser, vice president of IS at Brigham and Women's Hospital in Boston. He advises the point person to develop "a short but exciting sound-bite mentality message."

One of the easiest ways to recruit allies in management ranks is to find people — preferably bosses and managers — who will directly and instantaneously benefit from the technology project under consideration, says former CIO Jim Fitchett.

In his six years in the top information technology post at Harvard Medical School, Fitchett, now an independent consultant, installed a campuswide fiber network that tied together administrators, academic researchers and clinicians at 19 medical organizations.

He also switched 3,100 phones to an Integrated Services Digital Network and brought up a campuswide electronic-mail system and an on-line system for searching the National Library of Medicine's database of 6,000 journals. So Fitchett speaks from experience when he insists that "whether a potential champion for a project is a technophile or technophobe is irrelevant."

What is important, he says, is the stature of the champion. To sell the school's administration on E-mail, for instance, Fitchett set up a small pilot project whose users included high-level medical school executives and a geographically dispersed group of well-regarded researchers who were using a limited mainframe-based E-mail system. His two criteria for choosing pilot project participants were very pragmatic.

"I wanted executives with a lot of influence over the rest of the community. I also picked people I thought would be most resistant to change because if the pilot worked, I would have eliminated the strongest opposition," he says.

True believers

Fitchett set up his hand-picked group of users with Lotus Development Corp.'s CC:Mail, and in a very short time, "they became dependent on the system and began proselytizing its benefits," he says.

This was done largely in an informal fashion. For instance, one colleague might praise the ability to attach binary files to messages, and from there, word would spread, Fitchett says.

To get a handle on precisely who key decision-makers are as well as who influences their thinking, Glaser says a CIO must "constantly do political reconnaissance."

Fundamentally, this boils down to "good listening. You slowly develop an appreciation for who matters and learn to distinguish between white noise and real noise. It's something that's almost visceral," he says.

To win support for major projects such as the massive architectural overhaul now in its final stages at Brigham and Women's, "you also have to have a deeply rooted vision of your own and be able to explain exactly why the current system can't fulfill that vision," Glaser says.

Major revamp

In 1989, Glaser's vision entailed nothing short of ripping out all host/terminal-based hardware housing all 65 administrative and clinical applications and then reinstalling the same applications on a system of networked PCs. The new networked system would offer state-of-the-art health care services, such as digitized X-ray transmissions.

"The idea was that from a pure business perspective this would increase revenues because we'd get increased referrals to the radiology department," Glaser says.

From an IS perspective, "What we were talking about was like replacing the rug beneath a cocktail party and having nobody notice. It was a very serious major big deal, and that's the way we sold it," Glaser says. "We said from the beginning that it would take three to five years and cost millions of dollars."

Management's first reaction was disbelief, which Glaser said he had anticipated.

The operative word is win rather than decree. Just as outside organizations can sway buyers with discounts and other favorable contractual terms, most CIOs have a number of inducements they too can use to sign over prospective project champions.

PAUL OUELLETTE, PRINCIPAL AT OUELLETTE & ASSOCIATES AND AUTHOR OF *HOW TO MARKET THE IS DEPARTMENT INTERNALLY*

"Remember, this is 1989, and we were talking about networked PCs," he says. So Glaser returned to management with an 18-month plan under which seven external review groups would test the feasibility and risks of the network plan.

Some of the review groups, such as teams from IBM and Digital Equipment Corp., were "opportunistic," Glaser says. That is, if the project proved feasible, both companies had a shot at a big hardware contract.

In exchange for allowing them to review the hospital's IS plans, Glaser required absolute candor on their part. The other review groups, he says, provided the various technical, medical and business perspectives the proposed project required.

"The logic behind the reviews was to test the whole idea because the stakes were so high," he says.

Up and running

For two years the proposal held up, and the hospital moved its accounts payable system to networked PCs in early 1991. Four months after that, it moved another administrative system. In December of the same year, it migrated its first clinical application, a laboratory system physicians used to look up test results.

It all worked, but Glaser is careful to deflect any kudos, which is another important part of his ongoing IS marketing strategy. The IS department, he says, is just doing its job, which is to support the hospital, its patients and staff.

"The same way a good teacher never calls herself a good teacher in front of the class, we emphasize that it's the hospital and doctors who put up with IS," Glaser says.

Glaser says he believes this works to further increase IS credibility in the long run.

Most IS departments would do well to heed Glaser's advice, according to Paul Ouellette, principal at Ouellette & Associates Consulting, Inc. and author of *How To Market The IS Department Internally*. The reason is that most have a credibility problem that stems from a long tradition of dictating solutions rather than influencing technology choices.

Maneuvers, *page 94*

Waging the winning campaign

To be successful at selling an IS project:

CHOOSE CHAMPIONS for your cause who are respected and influential.

DO RECONNAISSANCE constantly to stay informed on whose opinions matter.

TARGET BENEFACTORS — preferably in high places — who will gain from your project.

SHARE YOUR VISION and show why it can't be achieved without your project.

MAKE MESSAGES short and simple.

OFFER INDUCEMENTS to win others to your cause.

INVOLVE USERS in the development process to gain their support.

PICK POINT PEOPLE with whom users can identify.

COMPROMISE periodically to keep users happy.

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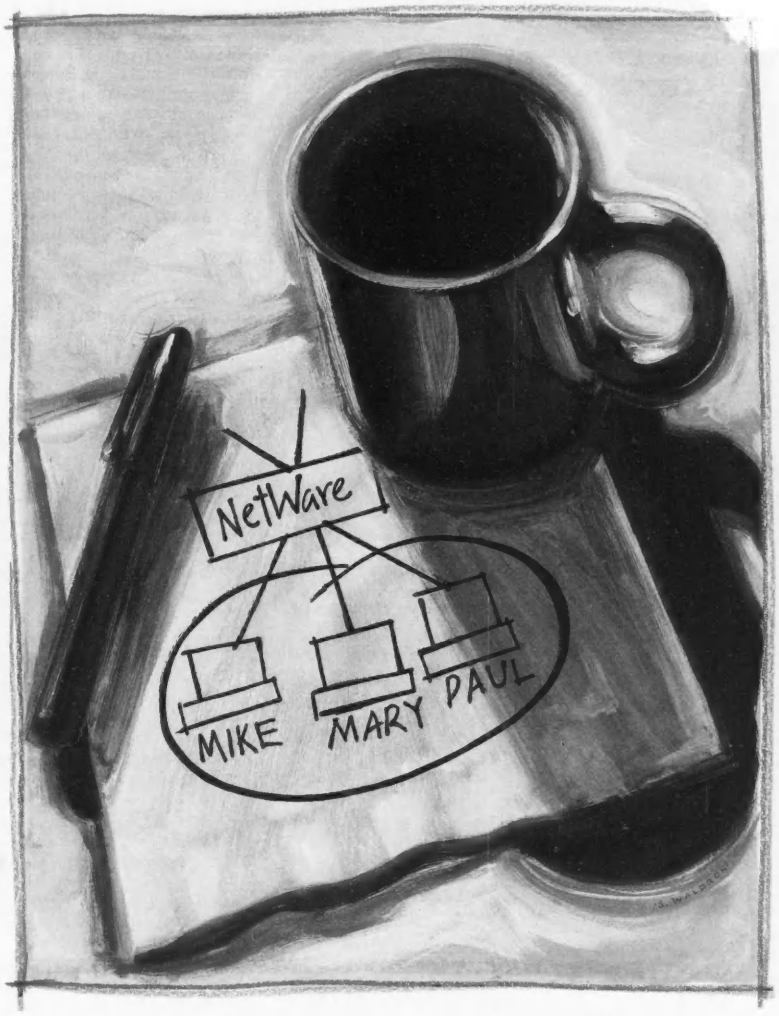

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Maneuvers

CONTINUED FROM PAGE 92

"Now IS must make a big cultural change," Ouellette says. "It has to behave in the same manner that any outside competitor coming in to win business would behave."

And here, Ouellette emphasizes, the operative word is win rather than decree. Just as outside organizations can sway buyers with discounts and other favorable contractual terms, most CIOs have a number of inducements they can use to win over prospective project champions.

Among the most powerful are pure IS-based resources, such as an applications developer devoted to a particular manager's pet project. As part of the technology marketing process, IS managers "have to look at things from a very practical point of view," says Cynthia Beath, an associate professor of management at Southern Methodist University in Dallas who has studied the corporate championing process.

"In return for support, let a project champion deviate from the rules and violate certain standards. Bump them up on the priority list," she tells IS managers.

Brigham and Women's Glaser, for one, says his department responds more rapidly to requests from higher-ups at the hospital, but he draws the line when it comes to standards. "You don't get to violate standards because that will ripple and start an erosion of the architecture."

Putting together a team

On the user side, one of the best ways to gain support is by involving users in the development process, says Alec Pettersen, vice president of IS at Fox Television Stations, Inc. in Los Angeles. Before seeking upper management's approval for a LAN-based sales system, for instance, his department included sales executives in the selection process.

"Building this kind of support in the user community gives you credibility when you go higher up for [financial] support for a project," he says.

One-on-one demonstrations have helped IS general manager Pauline Nornholm gain user buy-in on technology-based projects at Douglas Aircraft Co., a division of McDonnell Douglas Corp. in Long Beach, Calif. By showing users how a proposed client/server-based document management system would work when completed, Nornholm says she had no problem winning user support for the project.

"You can sell new things very easily by showing people how technology will make their jobs easier," Nornholm says.

Selling an idea

Nornholm estimates that between 80% and 90% of her job is selling, and that often includes selling to her own IS organization.

When she assumed her current post three years ago with the idea of distributing systems off of mainframes and making data available directly to end users, one of her first campaign challenges was changing the mind-set of a staff of largely Cobol programmers, who perceived data as the property of IS.

These days, CIOs are mostly selling infrastructure improvements, says Gerald Loev, a former CIO at The Prudential Insurance Company of America and now president of CSC Impact in Newark, N.J., the consulting arm of CSC Index, Inc. that deals with information technology strategy and organization.

Because it's more technology-oriented than business-oriented, infrastructure improvements are "a tough sell because you're selling stuff that business doesn't understand and doesn't see why it needs to be done," Loev says.

He compares it with a mayor trying to sell the voters on infrastructure improvements. They're needed, "but that's not what wins elections," he says.

While their tactics and methods may vary, the one thing on which most IS managers seem to agree is that the job of campaigning never ends.

"Marketing and politics are incredibly important," Glaser says.

"Every day you've got to keep your finger on the pulse because support is like a slowly leaking balloon. You have to constantly check its pressure and keep it inflated," he says. ■

King is a *Computerworld* senior editor, management.

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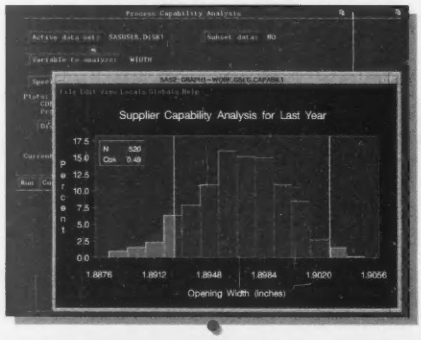

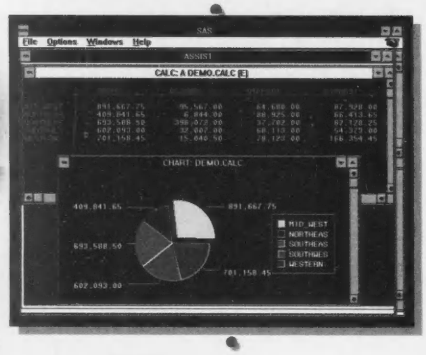

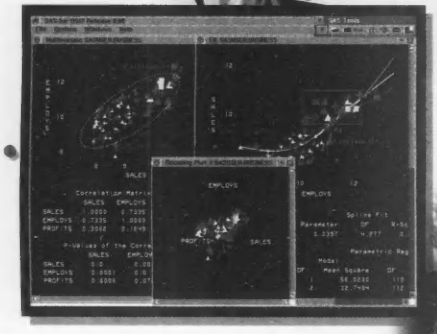

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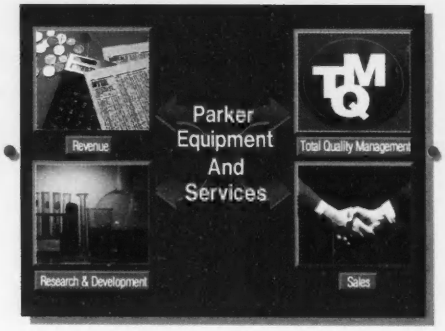

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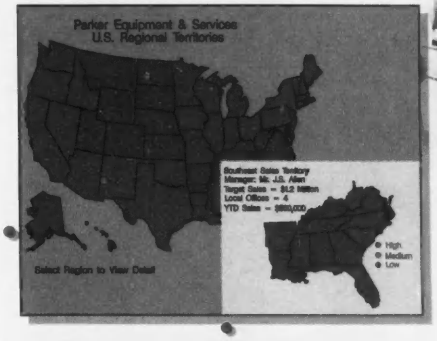

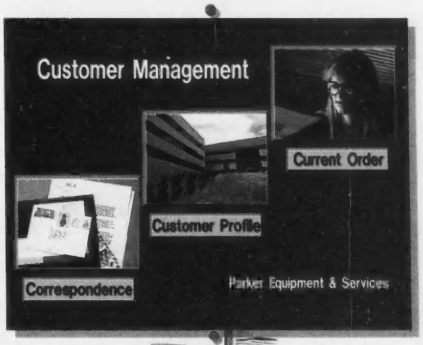

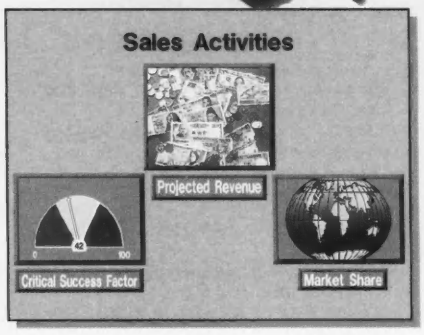

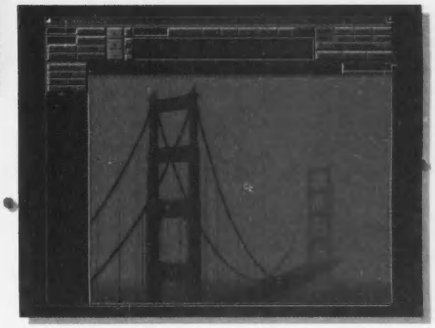

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"The big risk to business today is what I call destructive agreement. That's where everybody goes along with the plan, but not far enough to make it work. I try to expose what employees are really thinking."

SCOTT ADAMS

BY ROCHELLE GARNER

CARTOONIST SCOTT ADAMS HAS PUT HIS FINGER ON THE PULSE OF WHAT IS EMPLOYEES ARE REALLY THINKING — AND MANAGEMENT HAD BETTER PAY ATTENTION.

Scott Adams is doing what he'd always hoped he would do: Drawing cartoons that puncture pretension and magnify management follies.

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Today, Dilbert has outstripped "The Far Side" and "Calvin and Hobbes" as the comic most often littering the workplace. Its quiet subversiveness strikes a resonating chord in underappreciated programmers, systems analysts, engineers and scientists from Boston to Los Angeles.

And Dilbert's eerie ability to showcase dysfunctional corporate cultures has readers around the country convinced Adams is a colleague. Fans working at IBM, Digital Equipment Corp., Hewlett-Packard Co. and The Boeing Co. have admitted to searching company directories looking for him.

In fact Adams, 36, works as an applications engineer at Pacific Bell in San Ramon, Calif. But he's also an astute observer, able to translate workday inanities into examples of the human comedy.

"There are 25 million people working in cubicles who can't say what they are really thinking about management because they would get fired," Adams says. "If there's a utility to the strip, it's that it will tell you what people are thinking but won't say to your face."

His readers definitely agree.

"I've been clipping out the cartoons and pasting them on my door in the hopes that our nontechnical management would read them," says Brian Lalor, a systems analyst at Stanford Linear Accelerator Center in Palo Alto, Calif. "Dilbert gives us a voice and shares our perspective with people who don't live in our technical domain."

Cartoon therapy

For Adams, "Dilbert is an emotional outlet. Particularly in the old days, I had an amazing amount of rage built up. My ability to get my frustration out there for the world to see was very therapeutic. At this point, I do Dilbert more out of amusement. I'm less personally affected by frustration at work now. It just makes good fodder."

Adams says all the positive personalities in Dilbert are composites of friends and co-workers, and in fact, he tells them when they're going to appear in the strip. He sees himself as Dogbert.

Those negative personalities? They're co-workers, too, but so far they haven't recognized themselves. And Adams isn't telling.

Reluctant hero

Ironically, Adams never set out to be the champion of the technical worker. All he ever wanted was to become a world-class cartoonist. At age 11, he applied to the Famous Artists Course for Talented Young People — hoping to open the gates to the world of professional artists. He was turned down.

"It turns out you had to be at least 12," he says.

Later, this son of a Windham, N.Y., postal worker graduated valedictorian of his 40-person high school class. He went on to major in economics at Hartwick College in Oneonta, N.Y.

"It was close to where I lived, I had an academic scholarship, and it had a higher ratio of women to men," Adams says, explaining his choice. He graduated in 1979.

Where it all began

In 1983, Adams found himself in San Francisco — working days at Crocker National Bank, while attending evening courses for a three-year MBA program at the University of California at Berkeley. It was the beginning of Dilbert.

"I noticed that people had that

Adams, *page 101*

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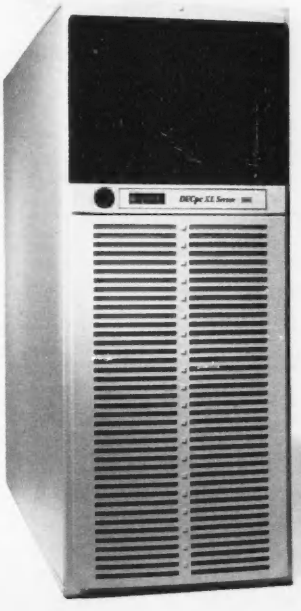

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Adams

CONTINUED FROM PAGE 98

potato-shaped body with glasses," he says. "I used that shape to doodle a composite of my co-workers."

By 1986, Adams was working at Pacific Bell, at about the same time as he received his MBA.

Once his studies were finished, Adams found he suddenly had time on his hands. He filled that void by drawing cartoons — lots and lots of them — and by pursuing cartoon syndication with a vengeance.

Widespread praise

Dilbert reached the nation's newspapers in 1989. Since then, he has won the respect of management consultants around the country.

Re-engineering guru Michael Hammer has called Adams "the preeminent business thinker [and observer] of the late 20th century."

WHERE TO FIND DILBERT

Scott Adams' Dilbert comic strip is syndicated in 175 newspapers nationally, including the following major newspapers:

- The Boston Globe
- Chicago Tribune
- Dallas Morning News
- Denver Post
- Detroit News
- Houston Post
- Milwaukee Journal
- New York Newsday
- Philadelphia Daily News
- San Francisco Examiner
- Seattle Post-Intelligencer

Management pundit Tom Peters even provides the voice-over for the "Dilbert on Quality" video from Cohen/Gebler Associations, Inc. Its Dilbert Business Video series provides one- and five-minute openers for a variety of business meetings, including quality, managing change and sales.

Both sides agree

"When we licensed Dilbert for these videos, we were intrigued that the strip was popular with both managers and employees," says David Gebler, president of the Boston corporate communications firm.

"Frankly, I think Scott Adams is the most insightful business humorist around today," Gebler says.

That insight, by the way, should prove valuable to managers who pay attention.

Maybe what they're really thinking is that you need to read more Dilbert. ■

Garner is a free-lance writer in San Carlos, Calif.

THE DILBERT BOOKS

Scott Adams has published three Dilbert books to date, with his fourth due out this month. Dilbert's collected wit and wisdom can be found in the following titles:

1. **Build a Better Life by Stealing Office Supplies** *(Kansas City: Andrews & McMeel, 1991).*
2. **How to Avoid Meetings with Time-wasting Morons** *(Kansas City: Andrews & McMeel, 1992).*
3. **Dogbert's Clues for the Clueless** *(Kansas City: Andrews & McMeel, 1993).*
4. **Shave the Whales** *(Kansas City: Andrews & McMeel, due May 1994).*

Calendar

MAY 8-14

Meeting The Global Challenge. Anaheim, Calif., May 8-10 — Contact: Beth Bolog, National Center for Manufacturing Sciences, Ann Arbor, Mich. (313) 995-7962.

Conference on Interactive Marketing/East. Orlando, Fla., May 8-11 — This conference will specifically cover interactive TV. Focus: Anatomy of an interactive deal, interactive telephone, online services, interactive advertising, video games, new interactive cable networks and more. Contact: Interactive Marketing, Inc., Los Angeles, Calif. (310) 473-4147.

Enterprise PC. Carlsbad, Calif., May 8-11 — Focus: "Desktop Strategies for the 90s." Contact: Technologic Partners, New York, N.Y. (800) 869-6963.

'94 Masters Conference. Atlanta, May 8-13 — Contact: Structured Solutions, Atlanta, Ga. (404) 618-7900.

1994 Micro Focus Conference. San Francisco, May 9-13 — Contact: Micro Focus User Conference Headquarters, Palo Alto, Calif. (415) 496-7356.

Technology from Russia '94 Conference and Exposition. Washington, May 10-12 — Contact: J. Spargo & Associates, Inc., Fairfax, Va. (703) 631-6200.

Decision Support Center 1994 Conference. Naples, Fla., May 10-13 — Focus will be on data center, network, applications, distributed computing, outsourcing and quality/value. Contact: Real Decisions, Darien, Conn. (203) 656-1500.

Boole & Babbage Users' Group '94. Chicago, May 11-13 — Contact: Boole & Babbage, Inc., San Jose, Calif. (408) 526-3000.

Re-engineering/Hammer Forum & Clinic 94. Boston, May 11-13 — Focus: "Large-scale Re-engineering: Reinventing the Entire Enterprise." A landmark conference on the next wave of re-engineering. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

1994 Internal Customer Satisfaction Conference. San Diego, May 12-13 — Contact: The Conference Board, Inc., New York, N.Y. (212) 339-0345.

No Boundaries — The Global Connection. Orlando, Fla., May 13-15 — Contact: Sharyl Bradley-Hennard, The Society of Telecommunications Consultants, Boca Raton, Fla. (407) 852-7071.

MAY 15-21

The Annual Data Dictionary/Respository Symposium. Atlantic City, May 15-18 — Contact: Data Administration User's Group, Bayonne, N.J. (201) 823-4800.

EIS/94 Agenda. Rockville, Md., May 15-18 — The EIS/94 program stresses information technology in action. Contact: Emergency Information Systems (EIS) International-EIS/94 Conference Registrar, Rockville, Md. (301) 739-6900.

The Seventh International Software Quality Week Conference. San Francisco, May 17-20 — Software Quality Week focuses on advances in software test technology, quality control, risk management, software safety and test automation. Contact: Software Research, Inc., San Francisco, Calif. (415) 957-1441.

Government Technology Conference. Sacramento, Calif., May 18-19 — Topic tracks include results-oriented government, enterprising government, customer service enablers, leveraging technology, emerging technologies and networks. Contact: Deborah Furlow, Government Technology Conference, Sacramento, Calif. (916) 363-5000.

Object Technology and Management & Designing Object-oriented Libraries: The Art & the Science. Chicago, May 19-20 — Speaker will be Bertrand Meyer, president of Interactive Software Engineering, Inc. (ISE) in Santa Barbara, Calif. Contact: ISE, Goleta, Calif. (805) 685-1006.

MAY 22-28

International Communications Association (ICA) Expo Dallas '94. Dallas, May 22-23 — Both conference and exposition will focus on strategic issues involved in managing the enterprise network. The full range of communications solutions, from office LANs to intercontinental voice/data networks, will be demonstrated among the exhibits and discussed in the conference. Contact: ICA, Dallas, Texas (800) 422-4636.

SynOptics Users Group Conference. Santa Clara, Calif., May 22-25 — Keynote speakers from SynOptics Communications, Inc. Contact: SynOptics Users Group, Santa Clara, Calif. (408) 988-2400.

Viasoft, Inc. User Conference. Phoenix, May 22-25 — Contact: Viasoft, Phoenix, Ariz. (602) 952-0050.

First Ever Manufacturing Execution Systems Association (MESA) Roundtable. Chicago, May 23-24 — MESA International is a not-for-profit trade association whose members are vendors of integrated MESA and related technologies, including point solution, hardware platforms, database, systems integration services, data collection technology, controls and consulting services. Contact: Bill Hankanson, MESA International, Pittsburgh, Pa. (412) 781-9511.

Home Banking Forum. Chicago, May 23-24 — Theme: "Home Banking in an Interactive Age." Keynote speaker is Wesley C. Tallman, executive vice president of Visa International product and market development and president and CEO of Interlink. Contact: Faulkner & Gray, Inc. New York, N.Y. (212) 967-7180.

Principles and Techniques for User Interface Design. Ann Arbor, Mich., May 23-25 — Contact: Engineering Conferences, The University of Michigan, Ann Arbor, Mich. (313) 764-8490.

DB/Expo '94: Database, Client/server & Technology Exposition & Conference. San Francisco, May 23-27 — Keynote speakers: Bill Gates of Microsoft Corp., Philippe Kahn of Borland International, Inc., Larry Ellison of Oracle Corp., Steven Jobs of Next Computer, Inc. and Umang Gupta of Gupta Corp. Contact: Blenheim NDN, Inc., Mountain View, Calif. (415) 966-8934.

Re-engineering Business Processes. Itasca, Ill., May 24-25 — Contact: David W. Burke, Sandra Conn Associates, Chicago, Ill. (708) 395-7990.

First Annual On-demand Digital Printing & Publishing Strategy Conference & Exposition. New York, May 24-26 — Show targets commercial printers, publishers, quick-copy print providers and service bureaus, as well as corporate, government and institutional offset and laser printing, high-speed copying and MIS/data centers. Contact: Expocon Management Associates, Inc., Fairfield, Conn. (203) 256-4700.

LAN/Securities and Exchange Commission '94. Washington, May 24-26 — One-day optional preconference workshops on May 23 and optional postconference workshops on May 27. Focus: The whole spectrum of LAN security and control challenges. Contact: Pam Bissett, MIS Training Institute, Framingham, Mass. (508) 879-9792.

Strategy Conference and Exposition. New York, May 24-26 — Contact: Expocon Management Associates, Inc., Fairfield, Conn. (203) 256-4700.

Twelfth Annual Information Management Conference. New York, May 25-26 — Contact: The Conference Board, Inc., New York, N.Y. (212) 339-0345.

Annual 1994 Midwest Computer Show. Rosemont, Ill., May 25-27 — Contact: Illinois Certified Public Accountant Society's Continuing Professional Education Dept., Rosemont, Ill. (312) 993-0393.

MAY 29-JUNE 4

Spring Internet World '94 & Document Delivery World '94. San Jose, Calif., May 31- June 3 — Sponsored by *Internet World* magazine and The Commercial Internet Exchange. Contact: Schwartz Public Relations Associates, New York, N.Y. (212) 677-8700.

CAUSE/Coalition for Networked Information Regional Conference. Philadelphia, June 1-3 — Sponsors: The Coalition for Networked Information is a joint initiative of CAUSE, EDCOM and ARL. CAUSE is the association for managing and using information technology in higher education. Contact: CAUSE, Boulder, Colo. (303) 449-4430.

Re-engineering: The Implementation Perspective. Cambridge, Mass., June 1-3 — Provides an introduction to the concepts and objectives of re-engineering with an analysis of the business factors driving it. The instructor will be Michael Hammer, The Center for Re-engineering Leadership, Cambridge, Mass. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

1994 AME Best of the Midwest Regional Conference. Chicago, June 2-3 — Theme: "Leadership Beyond the '90s." Keynote speakers: Allan Cox, the head of Allan Cox & Associates, and Phillip R. Thomas, founder and chairman of Thomas Group, Inc. Contact: Association for Manufacturing Excellence, Wheeling, Ill. (708) 520-3282.

Viscomm West. San Francisco, June 2-4 — Features three comprehensive conference programs including The Photo Conference for professional photographers, the Grafix Conference for graphic communications professionals and the Prolab Conference for photo lab owners and managers. Contact: CMC, Norwalk, Conn. (203) 852-0500.

JUNE 5-11

Technologies '94. Fort Lauderdale, Fla., June 5-8 — Keynote speaker will be Anne Peter, president and CEO of Instruction Set, Inc. in Natick, Mass. Contact: Technologies '94, Fort Lauderdale, Fla. (301) 490-2056.

Third Annual Geographic Information System (GIS) in Business Conference & Exposition. San Francisco, June 5-8 — Contact: GIS World, Inc., Fort Collins, Colo. (303) 223-4848.

XDB Fifth Annual International User Conference. Annapolis, Md., June 5-8 — Focus: "Navigating Your Client/server Course." Contact: Michael Donner, XDB Systems, Inc., Laurel, Md. (800) 488-4948.

Ziff Institute's Interactive '94 Conference & Expo. San Jose, Calif., June 5-8 — Focus will be on authoring, technology and training, workplace support and technology and corporate multimedia. Contact: Ziff Institute, Cambridge, Mass. (617) 252-5187.

Technology Transfer and Other Joint Venture Opportunities in the New India. Washington, June 6-8 — Keynote speakers: Naresh Chandra, senior advisor to the prime minister government of India, N. Vittal, secretary of telecommunications government of India. Contact: BDA, Inc., Washington, D.C. (800) 394-9390.

Object Expo. New York, June 6-10 — Sponsored by *Object Magazine*, C++, *Journal of Object-oriented Programming* and "The Smalltalk Report." Contact: Mike Doolittle, SIGS Conferences, Inc., New York, N.Y. (212) 274-9135.

1994 Internal Customer Satisfaction Conference. New York, June 7-8 — Contact: The Conference Board, Inc., New York, N.Y. (212) 339-0345.

JUNE 12-18

Applied Dynamics International Users Society (ADIUS) '94. Ann Arbor, Mich., June 12-15 — Contact: Applied Dynamics International, Ann Arbor, Mich. (313) 973-1300.

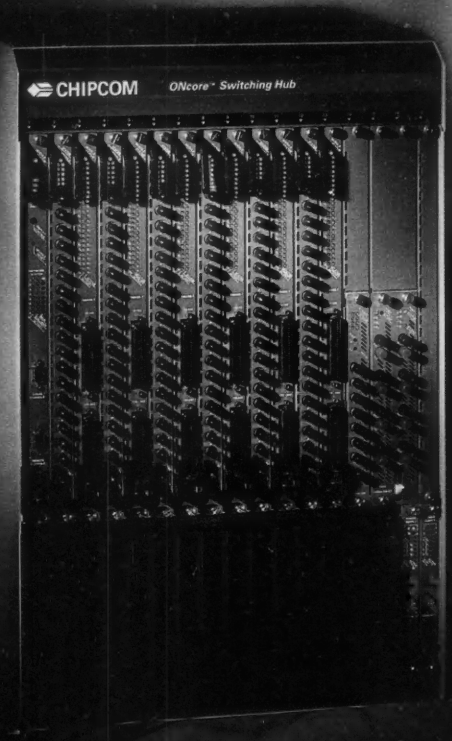
NetSec '94. San Francisco, June 13-15 — Contact: Computer Security Institute, San Francisco, Calif. (415) 905-2218.

JUNE 19-25

International Conference On Computer Architecture (ISCA) '95. Margherita Ligure, Italy, June 19-23 — Sponsored by ACM, the Association For Computing Machinery, Special Interest Group ARCH and IEEE-CS. Contact: Joseph Fisher, Hewlett-Packard Co., Palo Alto, Calif. (415) 857-5110.

OCT. 2-8

1994 NASIRE Annual Conference. San Francisco, Oct. 3-5 — The theme will be announced at a later date. Contact: NASIRE, (606) 231-1905.



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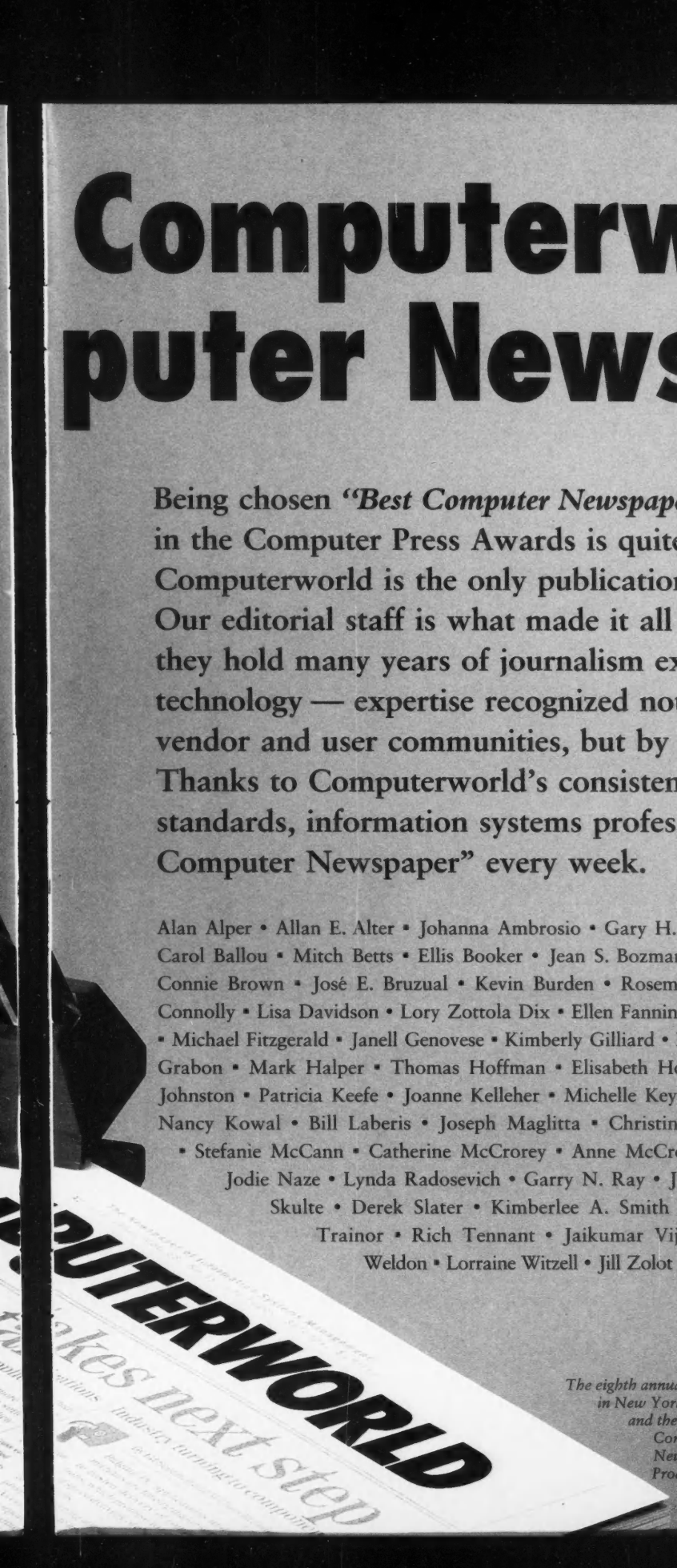
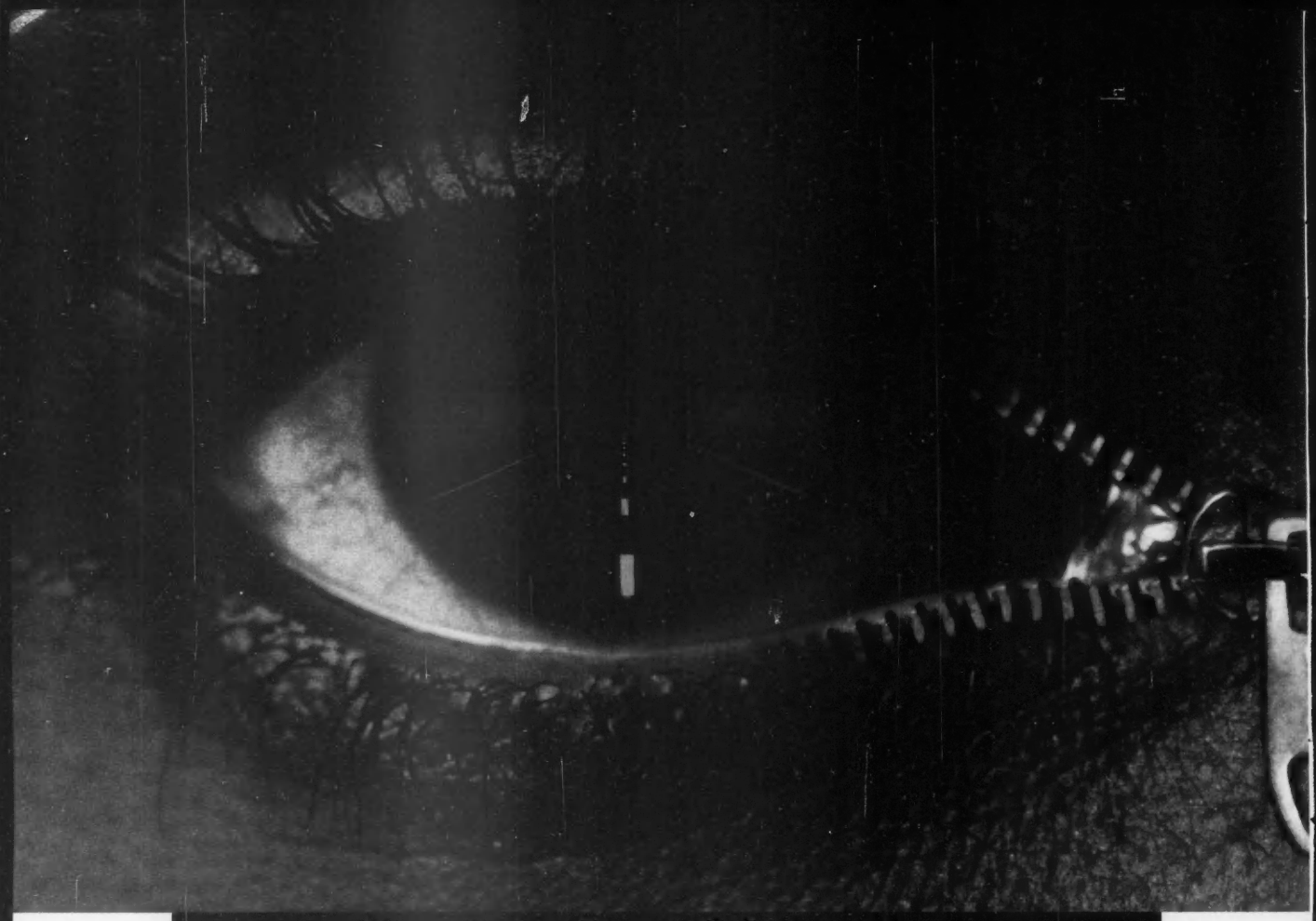


The eighth annual Computer Press Awards were held April 20, 1993 in New York City. Co-sponsors were Citizen America Corp. and the Computer Press Association. The ninth annual Computer Press Awards were held April 15, 1994, in New York City. Co-sponsors were 3M Data Storage Products and the Computer Press Association.



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EXCLUSIVE SURVEY

What do you think are the cause and cure for requirements creep?

SEE OUR EXCLUSIVE SURVEY, PAGES 108 AND 110.

Are you a victim of creeping user requirements?

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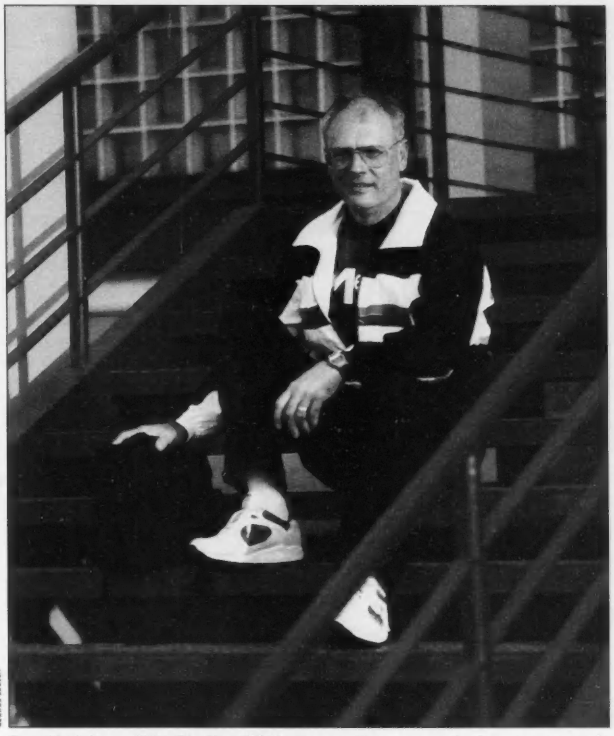


GEORGE CEOLLA

Terry Marksberry, CIO at The Meredith Corp., *says the company had to scrap a nearly 10-year-old development project whose creeping requirements pushed it to three times its original budget. "It was such a god-awful mess," he says.*

When IS staffs have to make significant changes to systems after they have frozen requirements and begun development, schedules and costs balloon. But some tech chiefs are fighting back by working more closely with users and by just saying 'no' to late changes.

BY GARY H. ANTHES

The last sad entries in the project manager's notebook read like the medical record of a dying patient: "Usage levels continue to drop. Company's financial situation grows worse. New management enters picture. Config project is terminated."

Config, an artificial intelligence application intended to help configure computer systems, suffered a needlessly long illness. A notebook entry dated 11 years earlier, when this real-life systems development project was just getting under way, raised this red flag: "Prime mover behind Config project is concerned that the company's [intended users] are not showing enough interest in the project."

Config was the victim of a familiar pattern known as "scope creep" or "creeping user requirements," a budget- and schedule-busting phenomenon that results when significant system changes are made after requirements are supposedly frozen and software development has begun. It cost this particular company tens of millions of dollars, according to Mark Keil, an assistant professor at Georgia State University.

Creep, *page 108*

Creep

CONTINUED FROM PAGE 107

"Scope creep is a big problem," Keil says. "When we talk to people about what project management difficulties they are having, that will be the first thing out of their mouths."

Keil says the problem often results from users not knowing what they want until they see it — or don't see it. In the case of Config, however, the problem was more insidious.

"Sometimes scope creep is a manifestation that users don't want the system," Keil says. "But rather than saying they don't want it, they say, 'I think I would use it if it just had this feature or that feature.'"

Config's would-be users were computer salespeople, and Config was to have helped them put together highly complex and error-free system configurations at order time. Problem was, the computer company rewarded sales volume, not order quality. Rather than just admitting they did not care much about configuration details, the sales reps made excuses for not using the system. The excuses became scope changes, and the project plunged into troubled waters.

Widespread problem

"Scope creep is one of the showstoppers," says James Willbern, national director of KPMG Peat Marwick's Runaway Systems Management practice. "Our experience is that all projects have overruns."

Still, not all information systems managers admit it happens on their watch. While a whopping 80% of 160 IS professionals recently surveyed by *Computerworld* say requirements creep "always" or "frequently" occurs, 20% say it seldom happens (see chart at left).

Asked why requirements get out of hand, the highest number (44%) cite "poor initial requirements definition" as the leading cause. Half as many (22%) say the cause is management failures after the requirements definition phase (see chart page 110).

Willbern says an organization's top management often must share in the blame. "Executives want to know what it's going to cost on Day 1, and that's where a lot of CIOs get into trouble," he says. "They commit to a number without having any idea what it's really going to be."

Willbern says IS managers often also do a poor job of managing expectations — both users' and senior managers'.

Enough is enough

The Meredith Corp. scrapped a subscription fulfillment application development project when it was almost a decade old and at three times its original budget. Expectations were clearly not managed, says Terry Marksberry, chief information officer at the Des Moines, Iowa-based publishing, real estate and broadcasting company.

As Meredith's business changed, developers constantly strove to hit a moving target rather than develop a baseline system they could modify later. Experts recommend such an approach, but developers, eager to please users at all costs, often ignore it.

"You need to start off with a clean set of requirements and put a stake in the ground," Marksberry says. "That was not done. The scope [of the project] kept creeping and creeping, and by the time the system neared completion, it was such a god-awful mess [that] it really didn't do what it was supposed to do. You have to put a fence around it and say, 'Here's the project, and here's the funding for it.'"

Meredith's fences are elastic. Marksberry says cost estimates contain a 10% to 20% contingency allowance. "We allow for an 'oops' factor," he says.

What do users think?

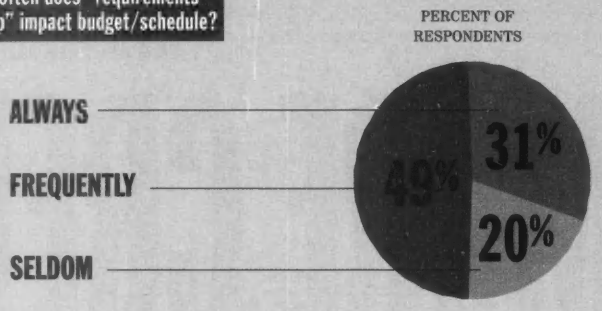
Gary Buda, vice president of operations at Meredith's real estate group, says scope creep has not been a problem in the projects in which he has been involved. One reason is that in the real estate group, end users design applications with help from IS, not the other way around. He says fully one-half the effort that went into designing an accounts receivable

Creep, *page 110*

CHANGE 'FOR THE WORSE'

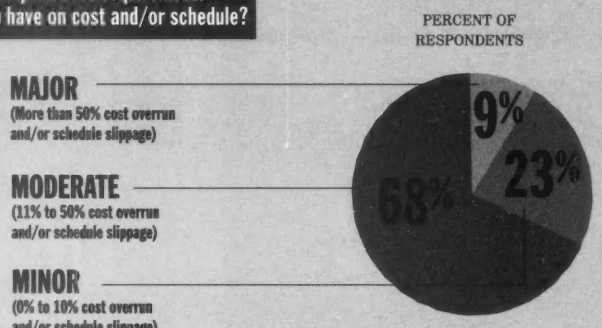
80% of IS projects go over budget and schedule because system changes occur after requirements are "frozen" . . .

How often does "requirements creep" impact budget/schedule?



. . . and the impact of requirements creep is often an 11% to 50% cost overrun and/or schedule slip.

What impact does requirements creep have on cost and/or schedule?



BASE: 160 DEVELOPMENT PROFESSIONALS

Source: *Computerworld*/First Market Research Corp.

Function points to the rescue

Errol Shim, former quality manager at Cincinnati Bell Information Systems, says the company recently completed a telephone billing system of extraordinary complexity. "They couldn't get a handle on when it would end," Shim says. "The president wanted an estimate, and he was told it would take three months to prepare the estimate. I did it in a week."

Shim did it with function-point analysis, which has given him an estimating track record of 85% to 90% accuracy, he says.

IBM developed the function-point concept in 1979. It is a sizing methodology based on counting an application's key components — inputs, outputs, inquiries, internal files and interface files — and then weighting those counts by rough measures of complexity to arrive at an unadjusted function-point count.

The count is then adjusted by additional factors that assess the complexity of the system overall on the basis of communications needs, performance goals, reusability objectives, multiple sites and so forth.

The development cost associated with a function point is remarkably constant within a class of applications — much more reliable than the traditional lines-of-code estimating technique — and is a highly reliable tool for understanding and pricing out the consequences of new system requirements, according to its adherents.

"The average cost to build a function point in the U.S. is about $1,000," says Capers Jones, software development guru and chairman of Software Productivity Research. "You can tell users that through the design phase a new requirement will cost $1,000 per function point, from design to testing it will cost $1,200, and during testing it will cost $2,000, for example."

According to Shim, now director of process improvement at U.S. Shoe Corp. in Cincinnati, the method provides a rigorous and credible way to convince the boss that the system cannot be developed for the figure he might have had in mind. It is also helpful in make-vs.-buy decisions, outsourcing decisions and in deciding when it makes more sense to develop a new system rather than enhance an old one.

—Gary H. Anthes

In May 1993, Russian President Boris Yeltsin held the power of a 53% majority of Russian voters. One year later, after failing to control annual inflation of 1000% and unemployment approaching 15%, Yeltsin's popular support has fallen below 8%.

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Creep

CONTINUED FROM PAGE 108

system now nearing completion came from his staff of end users.

At a previous employer, scope creep was rampant, Buda says, because IS was centralized and treated as a corporate expense; users had no direct financial stake in their projects. "People didn't do careful design work up front," he says. "It was sort of like, 'I need a system to do this. Here, IS guys, go do it.'"

By contrast, at Meredith, projects are funded out of the business units for which they are intended. In addition, IS people have a dual reporting relationship to IS management and business unit management. "IS people working on the real estate side of things take day-to-day direction from me," Buda says.

for top management to set up a configuration management board outside the project so the project manager is spared being the bad guy when user requests are denied or deferred.

Capers Jones, chairman of Software Productivity Research, Inc. in Burlington, Mass., says requirements creep at 1% per month, on average, from the time the requirements definition is ostensibly completed to when system testing ends. Thus, in a typical two-year development project, about one-fourth of what is delivered is not anticipated at the outset.

Jones recommends the use of function-point analysis as a way to help control scope creep (see related story, page 108). "Function-point concepts are starting to show up in a lot of contracts because it makes creeping user requirements crystal clear, and it enables you to assign a cost to them when they occur," he says.

PREVENTATIVE MEDICINE

Techniques for heading off requirements creep

TECHNIQUES	PERCENT OF RESPONDENTS
JOINT USER/DEVELOPER APPLICATION DESIGN	63%
PROTOTYPING	25%
THOROUGH REQUIREMENTS DEFINITION	23%
PROJECT MANAGEMENT/ MONITORING TOOLS	23%
SAYING NO TO USER REQUESTS LATE IN THE PROJECT	16%

BASE: 160 DEVELOPMENT PROFESSIONALS; MULTIPLE RESPONSES ALLOWED

Source: *Computerworld*/First Market Research Corp.

Timothy Lister, a principal at Atlantic Systems Guild, Inc. in New York, says project managers often find it hard to refuse users, even when they know creeping requirements are jeopardizing a project's schedule and budget. In the *Computerworld* survey, only 16% of IS respondents report they say "no" when users demand significant changes well into the development cycle (see chart above).

"How much can you absorb for free? The answer is, remarkably little. There is no slack in most IS schedules," Lister says.

He says one helpful approach is

Jones and most other software development experts also recommend prototyping and joint application development (JAD) sessions between users and developers as ways to involve the user more intimately in the development process at an early stage. These techniques should help preclude unpleasant surprises later. "They are extremely effective and have a long track record of success," Jones says. "Used together, they can make a 3- or 4-to-1 reduction in unplanned requirements."

To head off requirements creep, 63% of *Computerworld*'s survey respondents say they use JAD — the most often-cited method — and 25% say they do prototyping.

Keil, however, says there are no silver bullets for this problem, only good management. For example, he says good project managers are those who can explain to users the cost and scheduling implications of their requests and, if possible, get them to agree to defer them until after the base system is up and running.

Beginning step

"JAD and prototyping are great things, and we do them all," says Dennis Klinger, vice president and CIO at Ryder System, Inc., the truck rental and leasing firm in Miami. But he says Ryder has inserted a "premethodology" step at the very beginning of a project, one intended to derive a rough, business-oriented vision for the system — a vision shared by clients and developers.

"Senior IS people who are very familiar with the business sit down with the clients and brainstorm," Klinger says. "There's a lot of give and take. Together you can come up with a broad vision that neither of you might have come up with alone. You do a kind of business-level triage that is in some ways a scope agreement."

That is followed up with a brief written vision statement that outlines what is to be done and sets high-level objectives and some major boundaries.

That framework then becomes a backdrop for the JAD, prototyping and methodology pieces of the traditional development life cycle, Klinger says. ■

Anthes is a *Computerworld* senior correspondent in Washington.

POINTING THE FINGER

The top reasons for requirements creep

REASON	PERCENT OF RESPONDENTS
POOR INITIAL REQUIREMENTS DEFINITION	44%
NEW APPLICATIONS UNFAMILIAR TO USERS	36%
PROJECTS TAKE SO LONG THAT REQUIREMENTS GENUINELY DO CHANGE	28%
POOR MANAGEMENT/ FAILURE TO MANAGE USER EXPECTATIONS	22%
FAILURE TO INVOLVE USERS IN EARLY STAGES	19%
FAILURE TO EMPLOY TECHNIQUES SUCH AS PROTOTYPING OR JAD	6%

BASE: 160 DEVELOPMENT PROFESSIONALS; MULTIPLE RESPONSES ALLOWED

Source: *Computerworld*/First Market Research Corp.

An attack on ambiguous requirements

What we have here is a failure to communicate, says James D. Palmer, information technology professor at George Mason University in Fairfax, Va. "The reasons for requirements creep are relatively straightforward. We just don't do requirements engineering very well. It's the process that's not right."

The key cause of the problem is written system specifications that are ambiguous or inconsistent, he says. To address those weaknesses, research is under way at the university to improve developers' use of natural language and to augment natural language with formal methods and models.

The Advanced Integrated Requirements Engineering System (AIRES) is a set of automated tools developed in a research project at George Mason to help users and designers accurately and unambiguously specify requirements. It translates English language specifications into machine-readable diagrams and detailed specification statements. Those can be input to computer-aided software engineering tools for use by programmers in generating code.

Although AIRES is experimental, it is now used by several federal agencies that develop very large, complex systems, Palmer says. "Our goal is to remove ambiguities, inconsistencies, conflicts and redundancies in the English language requirements, to try and repair those before making the transformation into code," he says.

— Gary H. Anthes

Computer Careers

On the fringe

Massively parallel processing systems won't be in most data centers anytime soon, but they are coming

By Alan Radding

"Massively parallel processing must be adopted for a business to be successful in the 21st century," declares Gartner Group, Inc., which projects that the commercial MPP market will exceed $4 billion by 1997.

The reality, however, is that MPP is rare in commercial computing. Given that these systems cost millions of dollars, the few hundred million dollars in sales that Gartner projects for commercial markets this year doesn't translate into that many systems. Although it's expected to move into the mainstream for such computing challenges as massive centralized databases, MPP remains bleeding-edge technology for now.

KEEPING up

The MPP world only just began shifting its focus from scientific technical computing. There, MPP machines solve complex computations, often involving massive data sets.

In the commercial world, MPP systems will initially be used for decision-support applications that mine huge databases. Companies such as American Express Co. use MPP systems to splice their massive databases to identify buying patterns. In a few years, when MPP systems become more robust, they can be used for transaction processing, says David Frankel, director of technology at the Smaby Group in Minneapolis.

Careers in MPP, however, are only just evolving. "There are not yet a lot of MPP systems out there," cautions Paul Barth, vice president of technology for high-performance computing at Epsilon in Burlington, Mass. Companies like Epsilon, which deploy MPP systems, need MPP programmers, but the number of such companies is still tiny. Down the road, more will need developers who can build MPP applications using the emerging high-level tools.

However, MPP is not likely to replace other forms of commercial computing. "It only makes sense with large, centralized databases," Frankel says.

As MPP becomes mainstream, the best preparation is the same as for open systems and client/server computing—SQL and Unix. ■

Radding is a free-lance writer in Newton, Mass.

Three careers are developing around MPP, each requiring different skills:

Vendor oriented

These careers focus on building MPP systems and supporting customers. The position requires a computer science background and skills in C, Fortran and Unix. "These are top-level people," explains Dale Fisher, director of customer support at Thinking Machines Corp. in Cambridge, Mass. They work with customers to implement the system. As MPP machines proliferate, Fisher predicts that this career will change to consulting. Vendors will require people with world-class, state-of-the-art skills in advanced operating systems and compilers.

MPP programming

Currently, there are few off-the-shelf applications, so early user companies have to create their own in C, C++ and Fortran, explains Paul Barth, vice president of technology for high-performance computing at Epsilon, a subsidiary of Amex. Barth, who has advanced degrees in computer science, started his MPP career at Thinking Machines providing support for the Epsilon installation. Then he switched to the client side. "There is a high demand for people with the ability to take MPP technology and deliver production solutions," Barth says.

MPP application

This is where the market is heading. As products such as Oracle Corp.'s Oracle 7 and various high-level tools become available, careers will evolve for those who can use the tools to develop MPP applications. Except for database administrators, who will still need specialized knowledge about the system's underlying structure, these positions won't require extensive experience in parallel technology. "Organizations will be buying a black box. They will run their Oracle application and not care about the parallel details," says David Frankel, director of technology at the Smaby Group. Parallelization will take place in the operating system, out of sight of the high-level application developers. For these positions, experience with Unix, SQL and high-level tools will be required.

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Experience Xbase

By Pat Adams

Rumors of Xbase's death have been circulating for years yet sales continue to grow, making it one of the most widely used programming languages and development environments around.

Its flagging reputation has been strengthened through the purchase of several Xbase product lines by Microsoft Corp., Borland International, Inc. and Computer Associates International, Inc. According to experts, these powerhouses have the marketing, technical and financial resources to move Xbase into the next generation.

Even so, they have some catching up to do to get into the same league as Recital Corp., whose products are equipped with a true active data dictionary. Also under development is Recital's version for the Windows 32-bit environment, which Microsoft does not offer yet.

Microsoft's anticipated FoxPro 3.0, however, is expected to provide a true active data dictionary, be object-oriented and include tools that furnish easy methods of defining class libraries, hierarchies, individual instances and polymorphism.

As for Borland, dBase for Windows is due out next month and will include similar object orientation, but it won't support a true data dictionary.

While the growing installed base alone makes Xbase a good skill choice, other appealing factors exist.

The various Xbase dialects, for example, share the same core syntax and language structure, database file type and core of commands, features and functions. Each product then adds a superset of the same.

For example, the browse feature in FoxPro, dBase and Recital allows a developer to browse through a database in spreadsheet format. At the core level, it works the same way, but FoxPro adds a number of advanced capabilities. Such similarities make it easy to jump from one dialect to another.

The new breed of Xbase products currently in beta testing is expected to enable developers to deal with more sophisticated environments.

Versions under development or in beta testing address advanced technologies in more sophisticated ways than current products. For example, all Xbase flavors are LAN- and wide-area network-ready, except for CA's Clipper. Record and file-locking are built-in, as well as the ability to use files in an exclusive or shared mode.

The FoxPro Connectivity Kit provides Open Database Connectivity to a variety of client/server environments, and dBase can be used as a front end to access Borland's Interbase client/server engine.

Xbase also provides the international features often necessary in multinational companies. The FoxPro line supports a wide variety of foreign languages, including Scandinavian, Greek and Polish.

Yet, the best part of Xbase is that it's relatively painless in terms of price and training. Except for Clipper, all of the products provide an interactive development environment. Moreover, both Borland and Microsoft periodically offer a special $99 price for their interactive versions, as well as trade-in deals for other database products.

Start small, then upgrade

Users can use dBase, FoxPro and Recital interactively to access data and create ad hoc reports or queries. Developers can use them to develop and test applications. Interactive Xbase versions include a variety of tools such as screen painters, menu builders and report and label writers. Programmers simply paint on the screen, press a button and the Xbase product creates the source code.

Source code can be run in the interactive version, which makes testing and debugging much easier than the old method of writing, compiling, linking, testing and debugging code.

Developers can work in the interactive versions while they learn, then upgrade to the professional editions, which usually include tools such as .EXE compilers and connectivity kits.

Xbase is similar to English in its programming syntax, therefore the learning curve is less steep than with products such as C++ or Visual Basic. You can find help in journals such as *FoxTalk* and *Reference Clipper* from Pinnacle Publishing in Washington. CompuServe forums such as Foxforum, Clipper forum and dBase forum are also good learning tools. All provide information on local user groups. ■

Adams is president of DB Unlimited, a consulting firm in Brooklyn, N.Y., and an expert on the Xbase family of languages.

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Computer Consultant/Software Engineer: Design, develop, test and implement global framework, subsequent software application products (e.g. operation management, performance measurement, customer information systems) and graphical network user interfaces for telecommunications (telephone and cellular) industry. Use object-oriented programming, ORACLE, RDBMS, C, C++, PRO*C, SQL*FORMS, SQL*NET, MS/AIX-Windows, CASE tools (ORA*CASE, Design/1), TCP/IP, UUCP on IBM-RS6000 and IBM-3090 platforms running AIX 3.2 and MVS in performance of duties. Consult with end-users to determine database design and administration requirements. Some Projects performed at client sites in various geographical locations. 40 hrs/week. 9:00 a.m. to 5:00 p.m. $58,000 per year. Minimum requirements: Bachelor's of Science in Computer Science. Computer Science major must include at least one course each in data processing, information systems and system analysis. Must have completed one project in each of the following: 1) Object-oriented programming with AIX-Windows; 2) OLTP Telecommunications software design/development using UNIX-IPC and CURSES; 3) Client/Server based RDBMS internals and support applications. Must have at least 2 years experience in job offered or 2 years experience as a Software Consultant/Software Engineer. Experience must include AIX or UNIX, IBM-RS/6000, IBM 30XX or IBM-AT, PRO*C, SQL*FORMS, ORACLE, RDBMS, C AND C++. Resume required. Must have proof of legal authority to work permanently in the U.S. SEND 2 COPIES OF RESUME TO THE ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: PETE KULA. Reference # V-IL 11268-K. NO CALLS. AN EMPLOYER PAID AD.

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PROGRAMMER ANALYST (Ref. #27194) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; develop, enhance, test & debug large financial application software on Unisys A series mainframe using COBOL, ALGOL, COMS, DMS II, SDF, CANDE, TADS, ERGO, BINDER & WFL; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Software Engineer Trainee, Lead Analyst or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. of exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, financial application software; Unisys A series, COBOL, DMS 11, ALGOL, COMS, SDF, CANDE, BINDER, TADS & ERGO; $42,000/yr. 40 hr/wk., 8:30a-5p.

SYSTEMS ANALYST (Ref. #18194) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; study existing system & develop new system with necessary changes as required by industrial organization; existing system analysis, design & development of new system based on requirements of different user groups & derive integrated logical data model for new system using IBM ES9000, IBM PCs, CICS, DB2, TSO, ISPF, QMF, JCL & COBOL II; Reqs. Bach. in Comp. Sci., Computer, Electrical or Electronics Engg., Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Consultant or Jr. Programmer Analyst. Will accept 3 yrs. of college ed. plus 3 yrs. of exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, using IBM mainframes, CICS, DB2, TSO, ISPF, JCL, COBOL II, CASE TOOL & IBM PCs; $43,000/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref. #25494) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; process/data flow design, data modelling, process & procedure modelling, E-R diagramming, technical design, construction, migration of transformed data of an integrated insurance system; technical support & user interviews for analysis information gathering, design & development of system using IBM 3090, MVS/ESA, BULL DPS-7, GCOS-64, PS/2, DB2, CICS, APS, VSAM, QMF, FILE-AID, REXX, CLIST, JES2, XDB, MF WORKBENCH, XPEDITOR, INTERTEST, EASYTRIEVE & IEF casetool on PS/2, OS/2 & MS-DOS; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Systems Consultant, Graduate Engineering Trainee or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. of exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, analysis, design, development & review of program specifications on IBM 3090 & using MVS/ESA, PS/2, DB2, CICS, APS, VSAM, QMF, FILE-AID, JES2, XDB, MF WORKBENCH, XPEDITOR, INTERTEST & EASYTRIEVE; $42,000/yr., 40 hr/wk., 8:30a-5p.

SOFTWARE ENGINEER (Ref. #14794) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; open systems & applications for office automation, E-Mail gateway systems & relational databases based on object oriented, event driven, client-server architectures using UNIX O.S. internals, UNIX SV4.2, Service Access controllers, Port Monitors, Connection Servers, Modems, TCP/IP, X.5000, X-WINDOWS/MOTIF Graphical User Interface Environment; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. of exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, implementing user interface for E-Mail application that is conformant with ISO X.500 standard; developing relational database software & use C, C++, X-WINDOWS/MOTIF, UNIX O.S. & TCP/IP & must be familiar with client-server concepts; $38,665/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref. #18094) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; integrate packaging system; study of current data/process flow design to change to suit new requirements, meeting with users to gather requirements, provide technical support & develop database structures; technical support using COBOL II, IMS DB/DC, DB2 on IBM 3090 using IBM 3090, MVS/XA/ESA, VM/XA, IMS DB/DC, DB2, QMF, SPUFI, XPEDITER, COBOL II, WORDPERFECT, CLIST, REXX & ISPF/TSO; Reqs. Bach. in Comp. Sci., Computer, Electrical or Electronics Engg., Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, software development on IBM mainframe computers & using DB2, COBOL II, CLIST, IMS DB/DC, REXX, JCL, MVS/ESA & VM/XA O.S.; $38,500/yr. 40 hr/wk., 8:30a-5p.

PROGRAMMER ANALYST (Ref. #24494) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to clients' needs; analyze, design, develop & implement computer software for clients' electronic data processing systems; analyze, design & develop integrated database system; process & data flow design, data modelling identification, technical support & overall design of application part of system, meet with users to gather requirements using IBM ES/9000 running VM & MVS O.S., DOS/VSE, IBM PCs, SQL/DS or DB2, COBOL, FOCUS, CICS, REXX, PC/REXX, KEYPLAY, PASCAL, C, ICL DRS 300 using UNIX CDOS; Reqs. Bach. in Comp. Sci., Engineering, Systems Analysis or its equiv. & 2 yrs. exp. in job offered or 2 yrs. related exp. as a Programmer, Systems Programmer, Programmer/Analyst, Systems Analyst, Software Engineer, Systems Engineer or Consultant. Will accept 3 yrs. of college ed. plus 3 yrs. of exp. in job offered or in related occup. in lieu of req'd ed. & exp. Related exp. must include, in whole or in part, using IBM compatible PCs, MS/DOS, DB2, CICS, COBOL, MVS, IBM ES9000 & VM/ESA; $45,000/yr. 40 hr/wk., 8:30a-5p. Please send resume to 7310 Woodward Ave, Rm 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad.

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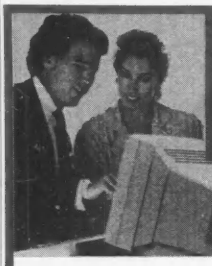

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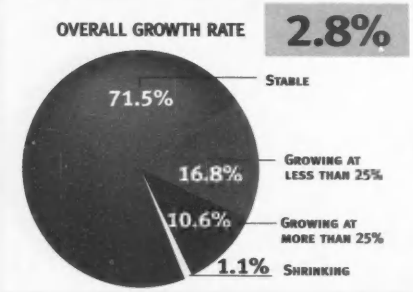

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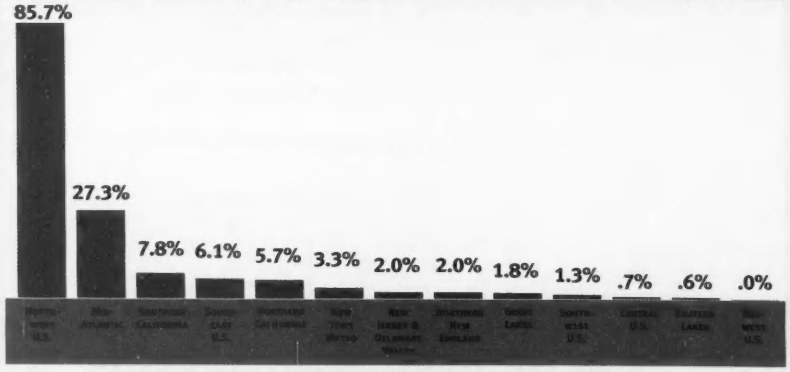

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VIRUS PROTECTION: AT YOUR SERVER

BY BRONWYN FRYER

In the 1960s bomb-scare movie "Dr. Strangelove," General Jack Ripper claims that "war is too important to be left to the politicians." In the war against computer viruses, systems administrators are beginning to adopt a similar dictum: Antivirus protection is too important to be left to the users.

For this reason, the hottest thing in antivirus protection is server-based software. Designed as Novell, Inc.'s NetWare Loadable Modules (NLM) for NetWare networks, this class of protection offers two obvious benefits over stand-alone PC products: They protect the network server and user machines from lurking viruses, and users don't have to worry about protecting their systems.

While it is possible to run conventional antivirus packages on a server, NLMs are superior, says Mike Grayson, technical manager at Software Solutions Corp. in Dallas. "A NLM can do real-time scanning of incoming and outgoing files from the server. That's critical when you have a lot of users changing disks all day," he says.

Everyone in the virus arena is hopping onto the NLM bandwagon, says Robert Bales, executive director at the National Computer Security Association (NCSA) in Washington. "It's a more proactive approach to protection." However, in spite of its growing popularity, the number of players is diminishing, Bales says.

Larger companies such as Symantec Corp. — which recently signed agreements with Central Point Software, Inc. and Fifth Generation Systems, Inc. to merge the companies — and Intel Corp. are expected to gain leads. However, competition will continue from smaller vendors such as McAfee Associates, Inc. and Brightwork Development Corp.

Currently, all major NLM products are able to detect more than 1,000 viruses. The downside is that they risk slowing down network performance, especially on a heavily loaded server. Also, NLMs only operate with NetWare, therefore real-time, server-based protection of non-Novell networks is still impossible.

Putting such considerations aside, which products are best? It depends on your needs. "All are pretty good at catching viruses," Bales says. For that reason, integration with your network as well as administration capabilities and performance handling needs to be evaluated.

According to an NCSA evaluation of packages for NetWare servers, two products — Central Point's Anti-Virus for NetWare and Intel's LANDesk Virus Protect — offer the broadest function sets. However, users such as Mike Grayson point out that the real proof is not clear until a problem occurs. "You don't know if an antivirus software package is really going to work until you find a virus," Grayson says.

Grayson said he likes McAfee Associate's Netshield, citing the company's constant updates of its virus list as a prime reason. "When we used Symantec's Norton Anti-Virus on a file server, it located a nonexistent virus in a PKZip file," he recalls. "When we checked the file against the McAfee product, we found that the Norton product had incorrectly read a file."

Other than the primary criterion of virus scanning, handling and reporting capabilities, look for features such as NetWare compatibility and a friendly administrator interface that supports remote administration. Experts also suggest finding a product that immediately warns the network manager when a virus is found. ■

Fryer is a free-lance writer in Menlo Park, Calif.

Antivirus software features

Vendors	Central Point Software, Inc., Beaverton, Ore.	Cheyenne Software, Inc., Roslyn Heights, N.Y.	Command Software Systems, Inc., Jupiter, Fla.	Symantec Corp., Cupertino, Calif.	Intel Corp., Santa Clara, Calif.	McAfee Associates, Inc., Santa Clara, Calif.
Product	Anti-Virus for NetWare 2.0	InocuLAN 2.5	Net-Prot Professional 1.24	Norton Anti-Virus for NetWare 1.0	LANDesk Virus Protect 2.1	NetShield 1.60
Base price	$1,199	$495, $995	$995	$995	$995	$595
Servers licensed	1	1	Unlimited	1	1	1

Where to find products

Because of the tightly integrated relationship that must be established between NLM and NetWare, Novell tests antivirus NLM products, then certifies them as NLMs. While a NetWare-certified product is important for quality assurance, certification is a slow process that not all vendors have gone through yet.

Alternatively, the NCSA offers a certification program that puts NLM products through the paces. Users can call the NCSA to verify NetWare certification and product capabilities at (717) 258-1816.

Virus researcher Patricia Hoffman also offers a $30 shareware program called VSUM, which includes information on every known virus as well as current antivirus products. The program can be downloaded by calling (408) 244-0813.

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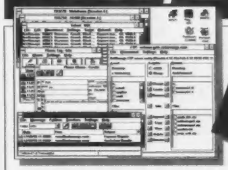

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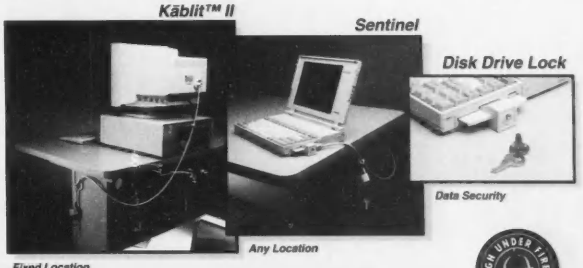

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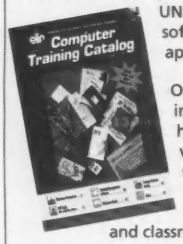

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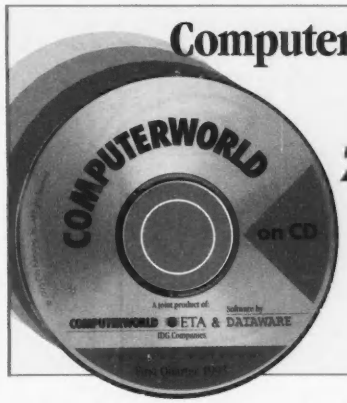

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Cray Computer	53.3	Gupta(L)	-32.2
Weitek(L)	32.5	Gateway 2000 Inc.	-22.0
Pinnacle Micro Inc.	20.4	4th Dimension	-18.3
Intuit Inc.	20.0	Cray Research Inc.	-17.4
Netrix Corp.	19.0	Advanced Logic Research	-14.6
Scientific Atlanta Inc.	18.8	Sapiens Intl. Corp. N.V. (L)	-13.2
Proteon Inc.	18.6	Mentor Graphics	-12.7
Microage Inc.	17.4	Centigram Communications	-12.6

Dollar

3 Com Corp.	7.50	Gupta(L)	-7.25
Lotus Development	7.50	Cray Research Inc.	-4.50
Intuit Inc.	6.00	Gateway 2000 Inc.	-4.38
Scientific Atlanta Inc.	5.25	Autodesk Inc.	-4.31
Xerox Corp.	4.25	Centigram Communications	-4.25
Xilinx	4.13	Progress Software Corp.	-2.75
Microage Inc.	3.75	Wall Data Inc.	-2.13
Stratus Computer Inc.	3.75	NetManage Inc.	-2.00

Reprinted from Barron's

Modem fracas kicks up

The fur is starting to fly over **U.S. Robotics, Inc.** (USRX). The high-speed modem maker racked up solid earnings growth again in its recent quarterly results, but investment advisors are squabbling over where the stock is headed.

Market Trim Tabs, a publication based in Santa Rosa, Calif., recently recommended U.S. Robotics' stock as a "short," anticipating a drop in share price. (Short selling is a technique that yields a profit if the stock price goes down.)

According to *Market Trim Tabs* editor Charles Biderman, U.S. Robotics' inventory levels grew even faster than its revenue did last quarter. That means the company may have to take a charge against earnings in the future to write off excess products.

Biderman also said it is odd that U.S. Robotics' gross margins have grown while prices in the high-speed modem market have fallen precipitously.

U.S. Robotics Chief Financial Officer Ross Manire responded: "What they don't seem to bother to analyze is the fact that we are in a number of other business lines. Our other businesses have much higher margins and have provided some uplift. Also, our price moves have been tied to architectural changes and cost reductions."

Hambrecht & Quist, Inc. senior analyst Steven Levy said the company's inventory growth is sound and necessary. Levy said much of the inventory went into a new warehouse in Europe to support expansion efforts overseas. Levy further noted that the company needs to be ready to meet increased demand based on aggressive domestic price promotions.

So far, investors appear to be siding with the bulls. *Market Trim Tabs*' initial short recommendation (April 11) appeared with the stock at 32½ Wednesday the price stood above 33.

—Derek Slater

Steady as she goes

U.S. Robotics has managed year-over-year and sequential earnings growth for the past couple of years. The company's first fiscal quarter ends Dec. 31 of the previous calendar year.

	Earnings per share		
Fiscal quarter	1992	1993	1994
First quarter	0.22	0.30	0.46
Second quarter	0.24	0.31	0.49
Third quarter	0.26	0.36	NA
Fourth quarter	0.28	0.44	NA

NA: Not available

Exch	52-Week Range			Apr. 29 3 PM	Wk Net Change	Wk Pct Change
Communications and Network Services						Up 2.83%
OTC	63.75	19.63	3 Com Corp.	57.63	7.50	15.0
NYS	45.56	35.50	AMERITECH Corp.	39.75	-2.00	-4.8
NYS	65.00	49.50	AT&T	51.13	-1.50	-2.9
OTC	26.50	12.50	Banyan Systems Inc.	17.38	1.13	6.9
NYS	69.13	49.00	Bell Atlantic Corp.	52.00	-2.00	-3.7
NYS	63.88	50.63	BellSouth Corp.	61.25	0.13	0.2
NYS	21.50	4.38	Bolt, Beranek & Newman	11.75	-1.13	-8.7
OTC	15.75	9.50	Brooktrout Technology	13.75	0.38	2.8
NYS	132.50	86.50	Cabletron Systems	102.50	-1.50	-1.4
OTC	43.00	16.00	Centigram Communications	29.50	-4.25	-12.6
OTC	60.25	32.25	Chipcom Corp.	46.25	0.25	0.5
OTC	40.75	20.00	Cisco Systems Inc.	30.63	-0.63	-2.0
OTC	18.38	8.38	Compression Labs Inc.	12.00	1.63	15.7
OTC	12.38	4.94	Computer Network Tech.	8.25	-0.13	-1.5
OTC	36.00	8.50	CrossComm	10.88	0.13	1.2
OTC	3.56	1.50	Data Switch Corp.	2.13	0.13	6.3
NYS	73.13	33.25	DSC Communications	59.88	2.38	4.1
OTC	3.56	0.81	Gandalf Technologies Inc.	1.13	0.00	0.0
NYS	17.63	8.00	General Datacomm Inds.	12.75	1.75	15.9
NYS	39.88	29.50	GTE Corp.	31.75	-0.63	-1.9
NYS	95.97	73.88	ITT Corp.	90.25	3.25	3.7
OTC	29.88	21.38	MCI Commmunications Corp. (L)	22.63	-0.75	-3.2
OTC	7.75	1.50	Microcom Inc.	5.63	-0.13	-2.2
OTC	47.00	23.00	NetManage Inc.	33.50	-2.00	-5.6
OTC	7.25	3.50	Netrix Corp.	6.25	1.00	19.0
OTC	11.75	4.75	Network Computing Devices (L)	6.00	0.50	9.1
NYS	11.13	6.38	Network Equipment Tech.	8.13	-0.13	-1.5
OTC	23.38	8.00	Network General	18.38	1.38	8.1
OTC	10.13	6.38	Network Systems Corp. (L)	7.13	0.50	7.5
OTC	73.88	29.88	Newbridge Networks Corp.	48.75	0.38	0.8
NYS	38.63	21.38	Northern Telecom Ltd.	29.75	2.38	8.7
OTC	33.50	15.38	Novell Inc. (L)	18.50	2.13	13.0
NYS	48.88	33.25	Nynex Corp.	36.38	0.63	1.7
OTC	30.00	19.25	Octel Communications Corp.	20.75	-1.50	-6.7
OTC	18.25	9.00	Optical Data Systems Inc.	16.00	-0.75	-4.5
OTC	7.50	3.75	Penril Data Comm Networks	5.63	0.25	4.7
OTC	27.25	10.00	Picturetel Corp. (L)	12.25	1.25	11.4
OTC	8.25	3.63	Proteon Inc.	6.38	1.00	18.6
OTC	14.38	7.00	Racotek Inc.	9.00	0.00	0.0
NYS	38.88	24.88	Scientific Atlanta Inc.	33.25	5.25	18.8
NYS	47.00	36.75	Southwestern Bell Corp.	41.75	-1.38	-3.2
NYS	40.25	29.63	Sprint Corp.	36.25	-1.38	-3.7
OTC	26.75	13.75	Standard Microsystems Corp.	17.75	1.38	8.4
OTC	23.00	10.75	Stratacom Inc. (H)	22.88	0.88	4.0
OTC	42.75	18.50	Synoptics Communications (L)	20.25	0.50	2.5
OTC	15.25	2.88	Telebit Corp.	11.00	-0.13	-1.1
OTC	46.00	20.25	US Robotics	32.25	0.31	1.0
NYS	50.75	38.50	US West Inc.	41.25	-2.00	-4.6
OTC	87.75	38.75	Wellfleet Communications	73.75	3.50	5.0
OTC	28.25	9.25	Xircom	22.50	0.88	4.0
OTC	30.00	13.75	Xyplex Inc.	15.75	0.25	1.6
PCs and Workstations						Off 2.09%
OTC	7.50	2.63	Advanced Logic Research	5.13	-0.88	-14.6
OTC	59.13	22.00	Apple Computer Inc.	30.00	0.25	0.8
OTC	33.00	13.50	AST Research Inc.	17.75	0.00	0.0
NYS	112.00	43.13	Compaq Computer Corp. (H)	110.50	2.63	2.4
OTC	34.38	13.50	Dell Computer Corp.	22.38	-1.00	-4.3
OTC	25.00	15.50	Gateway 2000 Inc.	15.50	-4.38	-22.0
NYS	93.63	64.38	Hewlett Packard Co.	80.25	2.25	2.9
NYS	26.88	16.00	Silicon Graphics	25.00	1.13	4.7
OTC	32.63	20.88	Sun Microsystems Inc. (L)	22.25	-0.38	-1.7
NYS	50.75	28.13	Tandy Corp.	33.13	0.00	0.0
OTC	5.13	2.50	Zeos International Ltd.	3.13	0.25	8.7
Large Systems						Up 3.08%
ASE	7.88	4.38	Amdahl Corp. (H)	6.63	-0.63	-8.6
NYS	7.63	3.63	Convex Computer	5.88	-0.63	-9.6
OTC	4.50	0.50	Cray Computer	1.44	0.50	53.3
NYS	33.75	20.38	Cray Research Inc.	21.38	-4.50	-17.4
NYS	11.88	6.63	Data General Corp.	7.50	0.50	7.1
NYS	48.25	18.25	Digital Equipment Corp. (L)	22.00	2.63	13.5
NYS	52.25	33.88	Harris Corp.	43.63	0.25	0.6
NYS	60.00	40.63	IBM	57.13	-1.88	-3.2
OTC	25.75	7.75	Kendall Square Research	3.25	0.25	8.3
OTC	18.75	8.25	NetFrame (L)	11.75	1.25	11.9
OTC	26.00	6.25	Parallan Computer (L)	7.00	0.38	5.7
OTC	23.25	6.88	Pyramid Technology	8.25	0.25	3.1
OTC	23.25	11.13	Sequent Computer Sys. (L)	13.38	0.25	1.9
OTC	6.84	1.75	Sequoia Systems Inc.	5.00	-0.63	-11.1
NYS	41.25	20.25	Stratus Computer Inc.	27.00	3.75	16.1
NYS	16.38	8.50	Tandem Computers Inc.	11.63	-0.25	-2.1
OTC	30.00	10.75	TriCord Systems (L)	12.25	-0.88	-6.7
NYS	16.50	9.88	Unisys Corp.	10.88	-0.88	-7.4
Software						Up 0.83%
OTC	37.00	16.25	Adobe Systems Inc.	26.50	1.50	6.0
OTC	34.50	13.50	Aldus Corp.	29.00	1.75	6.4
OTC	8.88	5.00	American Software Inc.	5.13	-0.13	-2.4
OTC	15.75	6.75	Ask Computer Systems	9.00	0.50	5.9
OTC	61.75	37.00	Autodesk Inc.	51.19	-4.31	-7.8
OTC	4.50	2.38	Bachman Info. Systems	2.50	0.00	0.0
OTC	38.00	20.50	BGS Systems Inc.	21.75	-0.88	-3.9
OTC	71.00	43.00	BMC Software Inc.	60.63	-0.38	-0.6
OTC	28.25	20.38	Boole & Babbage	27.00	1.44	5.6
OTC	27.25	11.38	Borland Int'l Inc. (L)	11.88	-0.13	-1.0
OTC	25.00	9.50	Brock Control Systems Inc.	19.25	0.38	2.0
OTC	4.63	2.75	CE Software	3.25	-0.13	-3.7
ASE	30.34	16.91	Cheyenne Software Inc.	24.88	-1.63	-6.1
OTC	14.25	6.13	Cognos Inc.	11.50	-0.38	-3.2
NYS	44.88	23.38	Computer Associates	32.50	2.25	7.4
NYS	5.38	2.13	Computervision Corp.	4.00	0.50	14.3
OTC	48.25	21.00	Compuware Corp.	45.50	1.50	3.4
OTC	12.75	5.75	Comshare Inc.	11.00	0.25	2.3
OTC	22.00	7.00	Corel Corp.	20.25	1.00	5.2
OTC	7.75	3.38	Easel Corp.	4.25	-0.25	-5.6
OTC	29.25	10.00	Filenet Corp.	27.25	0.75	2.8
OTC	25.00	6.13	4th Dimension	6.13	-1.38	-18.3
OTC	12.50	5.25	Frame Technology	11.75	1.00	9.3
OTC	13.00	7.00	Group I Software	7.50	0.00	0.0
OTC	31.75	12.00	Gupta (L)	15.25	-7.25	-32.2
OTC	12.00	7.13	Hogan Systems Inc.	10.00	-0.13	-1.2
OTC	29.50	12.50	IMRS	23.63	0.38	1.6
OTC	44.75	12.50	Information Resources	14.50	0.50	3.6
OTC	27.25	15.75	Informix Corp.	16.63	0.13	0.8
OTC	12.38	8.50	Intergraph Corp.	9.50	0.00	0.0
OTC	9.25	4.88	Interleaf Inc.	6.88	0.50	7.8
OTC	15.50	4.75	Intersolv Inc.	11.00	-0.75	-6.4
OTC	50.00	25.75	Intuit Inc.	36.00	6.00	20.0
OTC	18.75	7.75	Knowledgeware Inc.	10.63	-1.38	-11.5
OTC	37.00	15.50	Legent Corp.	31.25	3.00	10.6
OTC	86.50	25.50	Lotus Development	63.63	7.50	13.4
OTC	19.25	11.50	Magic Software Enterprises	13.25	0.25	1.9
OTC	18.50	6.25	Manugistics Group Inc.	6.25	-0.75	-10.7
OTC	11.75	3.88	MathSoft	4.13	0.25	6.5
OTC	11.25	4.50	McAfee Associates	9.75	0.50	5.4
OTC	17.25	8.38	Mentor Graphics	12.00	-1.75	-12.7
OTC	37.50	12.25	Micro Focus (L)	12.25	0.25	2.1
OTC	11.63	4.63	Micrografx Inc.	6.63	0.00	0.0
OTC	98.00	70.38	Microsoft Corp.	92.75	1.75	1.9
OTC	37.75	17.69	Oracle Corp.	29.88	-0.50	-1.6
OTC	44.75	23.75	Parametric Technology	28.38	0.38	1.3
OTC	24.50	17.00	ParcPlace Systems Inc. (L)	18.25	0.50	2.8
OTC	41.38	26.00	Peoplesoft	30.75	-2.00	-6.1
OTC	6.25	3.50	Phoenix Technologies	5.00	-0.44	-8.1
OTC	69.50	22.00	Powersoft	54.00	2.25	4.3
OTC	39.75	3.50	Platinum Software	4.75	0.50	11.8
OTC	16.75	7.25	Platinum Technology	12.75	0.00	0.0
OTC	60.25	32.25	Progress Software Corp.	44.50	-2.75	-5.8
OTC	3.81	1.94	Quarterdeck Office Sys.	2.63	0.38	16.7
OTC	32.00	14.25	Rainbow Technologies Inc. (L)	15.50	-0.25	-1.6
OTC	11.38	4.88	Rasterops (L)	4.63	-0.13	-2.6
OTC	14.50	3.75	Ross Systems (L)	5.13	-0.38	-6.8
OTC	28.75	9.88	Sapiens Intl. Corp. N.V. (L)	9.88	-1.50	-13.2
OTC	14.00	9.75	Softkey International Inc.	11.25	1.13	11.1
OTC	8.63	4.75	Software Publishing Corp. (L)	5.19	-0.19	-3.5
OTC	17.25	7.38	Software Toolworks Inc.	14.50	-0.03	-0.2
OTC	13.75	6.25	State of the Art	7.50	0.25	3.4
NYS	35.63	17.63	Sterling Software Inc.	29.25	2.38	8.8
OTC	21.63	10.88	Struct. Dynamics Research (L)	11.50	0.63	5.7
OTC	51.25	25.75	Sybase Inc.	49.63	1.13	2.3
OTC	20.50	10.88	Symantec Corp.	15.63	1.13	7.8
OTC	52.75	33.75	SynOpsys	39.50	2.75	7.5
OTC	24.25	12.00	System Software Assoc.	16.00	0.50	3.2
OTC	6.75	2.88	Trinzic Corp.	4.38	0.38	9.4
OTC	30.00	14.25	ViewLogic Systems	25.00	-1.25	-4.8
OTC	13.25	5.50	Walker Interactive Systems	9.00	0.38	4.3
OTC	60.00	15.25	Wall Data Inc.	37.38	-2.13	-5.4
Semiconductors						Up 1.43%
NYS	32.75	16.75	Advanced Micro Devices	26.25	0.75	2.9
NYS	31.13	17.88	Analog Devices Inc.	27.25	1.00	3.8
OTC	25.31	9.56	Atmel Corp.	25.25	2.50	11.0
OTC	7.50	3.00	Chips and Technologies	4.63	-0.25	-5.1
OTC	44.63	15.75	Cirrus Logic	35.88	3.50	10.8
NYS	19.88	10.13	Cypress Semiconductor Corp.	16.63	0.00	0.0
NYS	20.00	12.63	Dallas Semiconductor	18.25	-0.50	-2.7
OTC	27.50	19.75	Integrated Silicon Systems	24.00	0.88	3.8
OTC	74.50	47.50	Intel Corp.	60.50	0.00	0.0
NYS	23.13	11.25	LSI Logic Corp. (H)	22.38	2.38	11.9
OTC	26.75	12.25	Lattice Semiconductor	17.00	0.50	3.0
NYS	39.91	9.19	Micron Technology	36.75	2.13	6.1
NYS	54.88	36.19	Motorola Inc.	44.50	-1.88	-4.0
NYS	25.00	12.88	National Semiconductor	20.63	1.00	5.1
OTC	10.13	6.50	Sierra Semiconductor	8.50	0.75	9.7
NYS	89.50	55.75	Texas Instruments	76.25	3.25	4.5
NYS	18.88	6.63	VLSI Technology	13.81	0.44	3.3
OTC	14.38	4.63	Weitek (L)	6.63	1.63	32.5
ASE	20.38	3.63	Western Digital Corp.	15.63	0.75	5.0
OTC	59.75	29.75	Xilinx	55.38	4.13	8.0
OTC	40.75	22.00	Zilog Inc.	33.13	1.38	4.3
Peripherals and Subsystems						Up 1.68%
OTC	30.50	13.88	American Power Conversion	22.50	0.25	1.1
OTC	24.75	17.13	Banctec Inc.	22.00	-1.50	-6.4
OTC	8.00	3.50	Cambex Corp.	3.63	0.13	3.6
ASE	8.25	2.63	Cognitronics Corp. (L)	2.88	0.25	8.0
NYS	20.50	9.00	Conner Peripherals	15.38	0.50	3.4
OTC	39.25	17.50	Creative Technologies Inc.	22.50	-1.50	-6.3
OTC	25.00	6.50	Data Race Inc.	7.25	-0.38	-4.9
ASE	11.63	4.13	Dataram Corp. (L)	5.00	0.50	11.1
NYS	23.00	7.50	EMC Corp.	17.38	-0.38	-2.1
OTC	8.25	3.13	Emulex Corp.	4.88	0.56	13.0
OTC	21.00	14.25	Evans & Sutherland	16.25	-1.00	-5.8
OTC	22.50	7.50	Exabyte	19.50	1.63	9.1
OTC	34.00	7.00	Intelligent Info. Systems	8.25	-0.25	-2.9
OTC	5.13	2.00	Iomega Corp. (L)	2.38	0.00	0.0
OTC	9.75	5.75	IPL Systems Inc. (L)	6.00	-0.50	-7.7
OTC	28.50	13.75	Komag Inc.	23.88	0.63	2.7
OTC	8.63	4.38	Maxtor Corp.	6.25	-0.13	-2.0
OTC	8.75	4.88	Micropolis Corp.	7.00	0.00	0.0
OTC	22.50	10.00	Pinnacle Micro Inc.	16.25	2.75	20.4
OTC	9.50	6.25	Printronix Inc.	8.25	-0.13	-1.5
NYS	16.38	7.38	QMS Inc. (L)	8.00	0.63	8.5
OTC	20.25	9.38	Quantum Corp.	17.88	1.88	11.7
OTC	9.13	3.13	Radius Inc.	6.88	0.25	3.8
NYS	17.75	9.63	Recognition International (L)	10.00	-0.75	-7.0
OTC	6.88	3.63	Rexon Inc.	6.25	0.63	11.1
OTC	28.75	14.38	Seagate Technology	26.38	1.81	7.4
NYS	45.00	23.75	Storage Technology	29.88	0.19	2.3
NYS	33.38	21.38	Tektronix Inc. (H)	30.25	-1.50	-4.7
NYS	104.88	69.88	Xerox Corp.	100.25	4.25	4.4
Services						Up 2.32%
OTC	22.38	14.88	American Mgmt. Systems	20.13	-0.38	-1.8
NYS	4.25	2.38	Anacomp Inc.	3.88	0.13	3.3
OTC	23.50	14.50	Analysts Int'l	15.50	-0.25	-1.6
NYS	56.88	46.88	Auto Data Processing	51.50	1.63	3.3
OTC	18.25	7.50	Cambridge Tech. Partners	15.00	0.25	1.7
NYS	24.63	13.00	Ceridian Corp.	24.63	0.50	2.1
NYS	24.25	13.88	Comdisco Inc.	20.13	0.00	0.0
OTC	12.50	4.84	Computer Horizons	10.00	0.25	2.6
NYS	41.75	23.59	Computer Sciences	38.00	1.00	2.7
NYS	8.75	6.00	Computer Task Group	8.50	0.63	7.9
NYS	35.00	17.13	CompuUSA Inc. (L)	18.13	0.25	1.4
OTC	13.50	7.75	Control Data Systems Inc.	10.00	0.25	2.6
OTC	11.00	6.63	Egghead Discount Software	8.38	0.19	2.3
NYS	36.88	26.00	General Motors E (EDS)	33.75	-0.88	-2.5
OTC	22.75	11.13	Inacom Corp. (L)	11.75	-1.25	-9.6
OTC	28.00	12.25	Intelligent Electronics	18.88	0.19	1.0
OTC	22.50	10.38	Merisel	17.44	0.56	3.3
OTC	32.50	8.50	Microage Inc.	25.25	3.75	17.4
OTC	40.50	23.84	Paychex	35.13	1.38	4.1
NYS	45.25	21.63	Policy Management Sys.	29.75	2.63	9.7
NYS	24.88	17.13	Reynolds and Reynolds	21.38	0.38	1.8
OTC	28.50	14.38	SEI Corp.	23.25	0.50	2.2
OTC	29.38	17.50	Shared Medical Systems	25.44	-0.44	-1.7
OTC	12.63	5.63	SHL Systemhouse	6.63	0.00	0.0
OTC	30.75	13.50	Software Spectrum Inc.	13.88	-0.13	-0.9
OTC	42.75	28.00	Sungard Data Systems	37.13	3.13	9.2

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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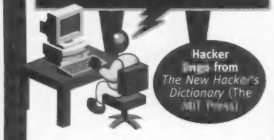
Wysiwyg

Hacker AMA



Hacker lingo from *The New Hacker's Dictionary* (The MIT Press)

Easter egg *(n.)*
1. A message hidden in the object code of a program as a joke. Many PCs have elaborate eggs hidden in read-only memory, including lists of developers' names, political exhortations, snatches of music and graphic images of development teams.

rain dance *(n.)*
Any ceremonial action taken to correct a hardware problem, with the expectation that nothing will be accomplished. "I can't boot up the machine. We'll have to wait for Greg to do his rain dance."

sagan [from Carl Sagan's TV series "Cosmos"; think 'billions and billions']
(n.) A large quantity of anything. "There's a sagan different ways to tweak Emacs."

Brain-Dead Users

Once, I went up to a user who had blown her autoexec.bat, and I asked her for the diskettes on which she had been backing up her 60M-byte hard drive. She handed over one diskette. "Where," I asked, "are the rest?" She told me she found out that if she kept pressing Enter in response to the message asking for another diskette, the system would just pack the data tighter onto the current diskette.

Submitted by Laurie Holmes, senior programmer at Ellis County Data Center, Hays, Kan.

Tech Trivia

1. Agnes, Paul and Denise were the names of three custom chips inside which PC?
2. What is the name of the C program that Unix programmers use to examine a program for style, language, usage and portability problems?
3. In a video display, the acronym RGB stands for red, green, blue. What does HSB stand for?

Source: The Computer Museum, Boston

Answers: 1. The Commodore Amiga 2. Lint 3. Hue, saturation, brightness

Great Names — **Richard Hardware**
Systems technician at SmithKline Beecham Corp.

What (humorous) spring cleaning advice would you give your vendors? Contact Lory Dix at (800) 343-6474, ext. 236 or CompuServe 76537,2413. If we use your idea, we'll send you a gift (but please leave a contact number).

Compiled by Lory Dix. Illustration by Dave Marshall

Inside Lines

All warm and fuzzy

In late May at Database World, Excalibur Technologies Corp. will announce the unbundling of its fuzzy search engine — licensing modules to OEM customers. The modules will come in three flavors: An adaptive print matcher for fingerprints, an adaptive face matcher for faces and a forms recognition system and text search system. The face search application, which was demonstrated at the recent AIIM show in New York, allowed a still frame from a video clip to be captured and used as a search "term" for a 15-minute video clip.

About that ProShare premium . . .

Intel has been making the rounds with its H.320 version of ProShare, due out either late in the third quarter or early in the fourth quarter. One large customer briefed recently said Intel showed two prototypes: one was purely software, the other was a hardware/software combination. The software version ran like ooze, the customer said, but Intel wants as much as a 100% premium over its proprietary version of ProShare for the H.320 version with hardware compression. "We told them no way were we going to pay a premium for a product that's standard in the market," the customer said.

Pucker up for protocols

Microsoft is actually moving to embrace rival Novell's IPX as its own favored LAN transport protocol for Chicago and Daytona, according to Burton Group President Jamie Lewis. Microsoft will provide 32-bit IPX as the default LAN protocol for Chicago, with TCP/IP as the favored WAN protocol. Also, much faster versions of IPX and TCP are coming with the Daytona version of Windows NT, according to Lewis. "They've realized a lot of companies use IPX and that supporting it doesn't mean they are conceding anything to Novell."

Out on the Delta

Delta Air Lines said it expects to decide within 30 days whether to enter an "information technology services" venture with AT&T. Delta said it has eliminated Electronic Data Systems Corp. from its outsourcing evaluation. An agreement with AT&T could affect 1,500 information systems workers at Delta, which last week began a $2 billion corporatewide cost-cutting initiative in which it in will eliminate 15,000 jobs, representing 20% of its work force.

Milling around the mill

Former Digital CEO Ken Olsen has been spotted roaming the hallways of Advanced Modular Solutions in Acton, Mass., a start-up he helped fund. But Olsen has apparently been wandering on grounds closer to his heart — the Maynard, Mass., mill where he started Digital. He is said to be one of two parties bidding on the mill.

Biting the hand that feeds . . .

It ranks high on the irony list, but sources close to the U.S. Department of Justice said it is installing Microsoft Mail — all while it is embroiled in an antitrust investigation against "Big Green."

Count on the world's oldest profession to use some of the world's newest technology. A RAM Mobile Data salesman recently told us about the business manager for a group of prostitutes in Las Vegas who was interested in purchasing Hewlett-Packard palmtops using RadioMail's wireless two way E-mail running on RAM Mobile Data wireless networks. Presumably, the devices would be used to assign tasks to the mobile workers. Local bookies are also keen on using the wireless service to get news feeds faster. Speaking of faster, the best way to get in touch with Computerworld *about news items or tips is to call our 24-hour voice-mail tip line at (508) 820-8555 or our toll-free number at (800) 343-6474. News Editor Maryfran Johnson can be reached by phone at (508) 820-8179, via the Internet at mjohnson@cw.com or through MCI Mail at 590-8017.*

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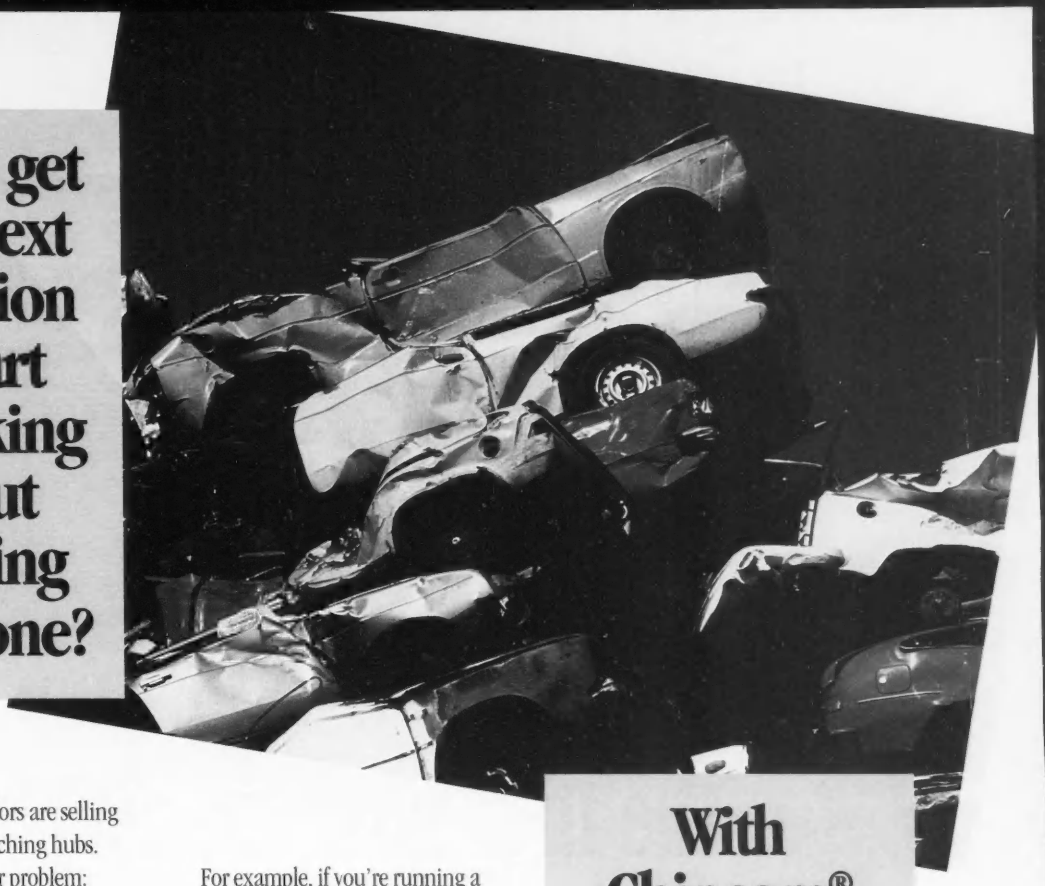

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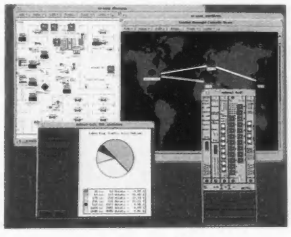

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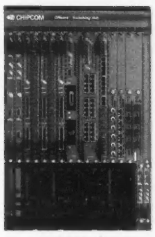

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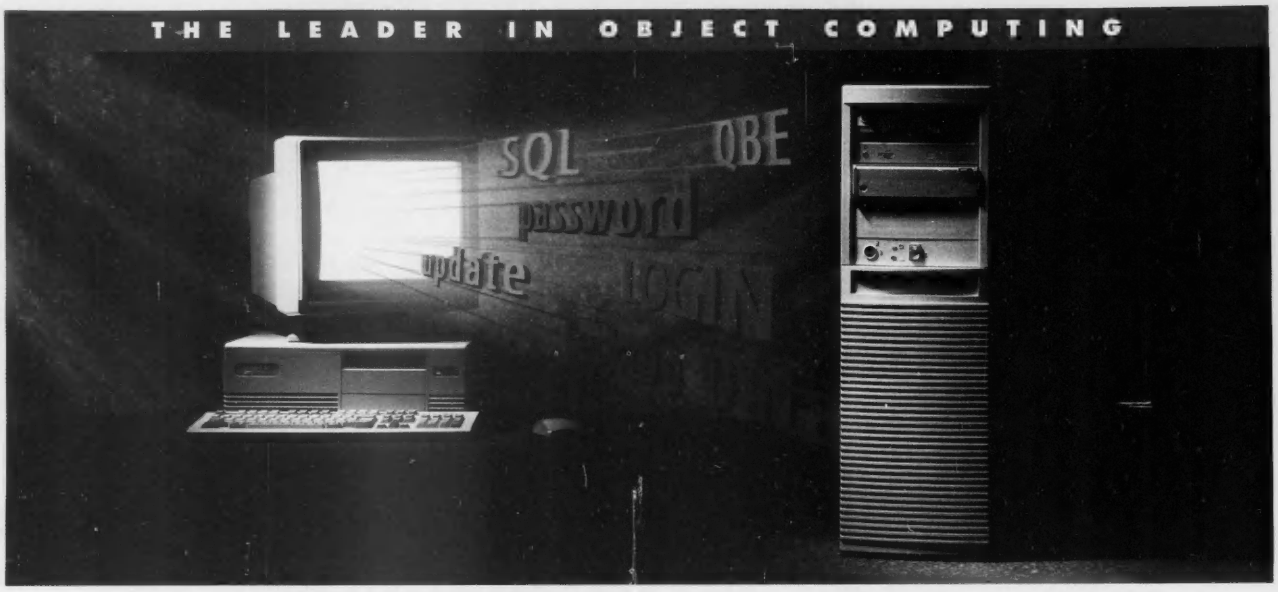

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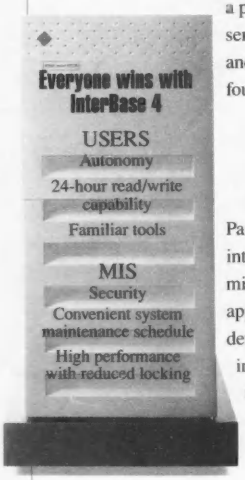

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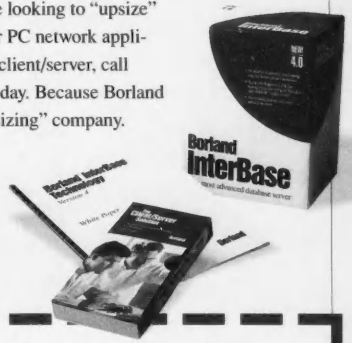

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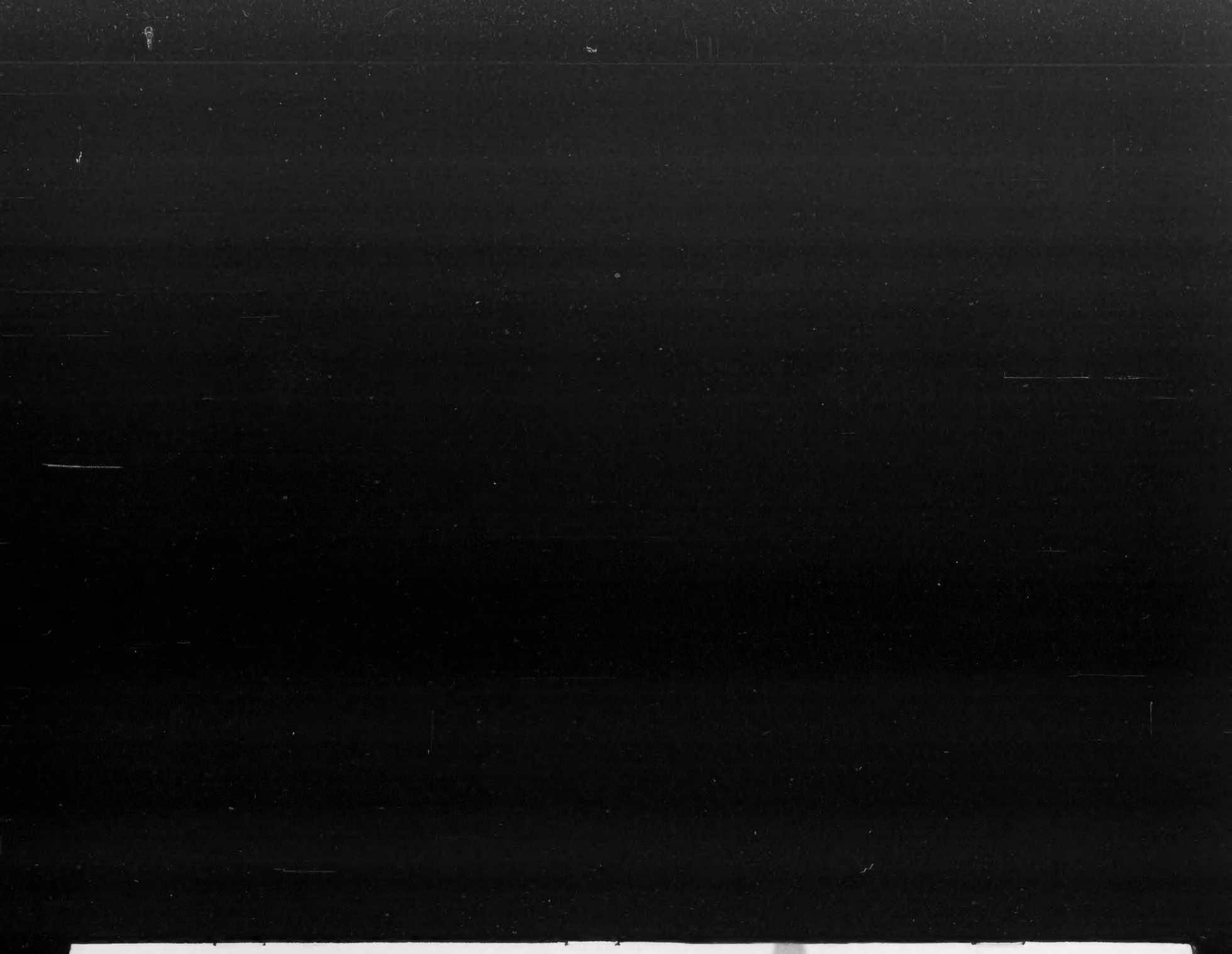
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